Backwoods Survival Guide®

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SELF-RELIANCE SKILLS

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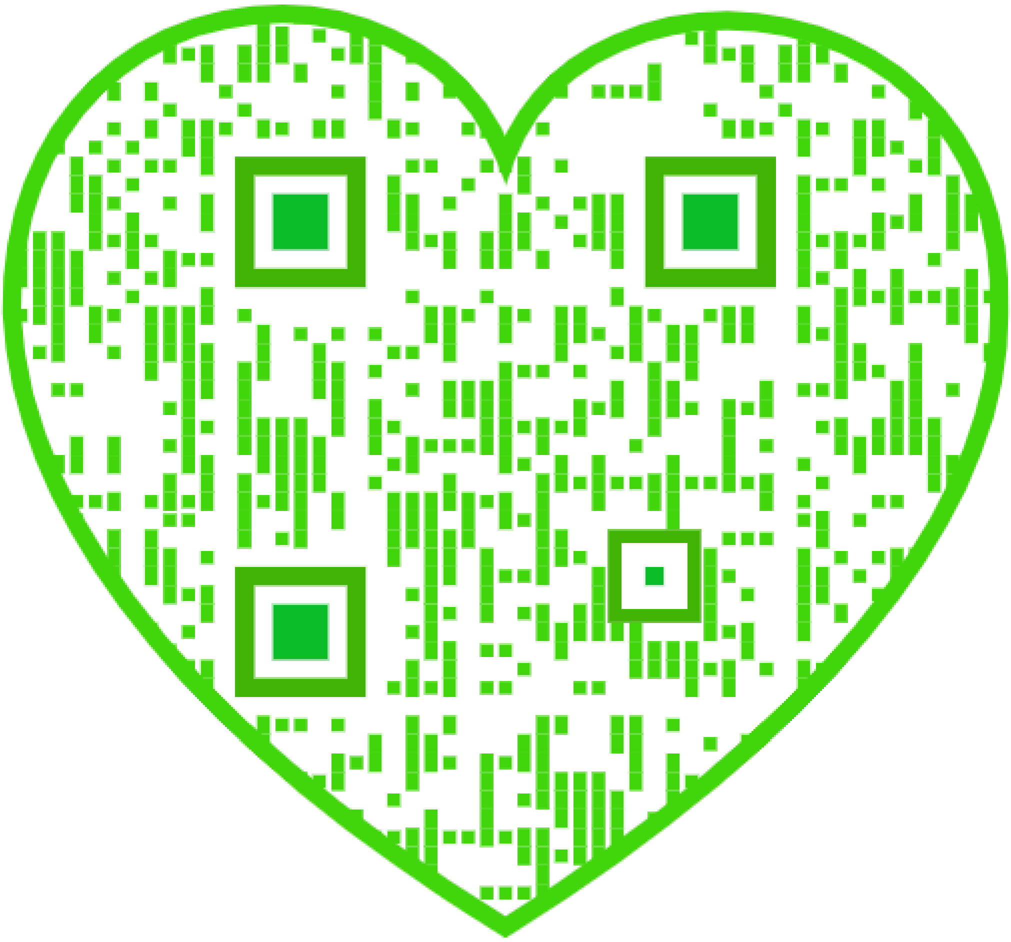


Backwoods Survival Guide®

PRACTICAL ADVICE FOR THE SIMPLE LIFE

CONTENTS

OUTDOORS

8 Critical Skills
What you need to learn and where to find the lessons.

14 Forage Without Fear
There's plenty of food in the wild, if you know where and how to locate it.

20 Multitools of the Wilderness
Trees make great firewood, but that's just scratching the surface of their usefulness.

26 Improvised Shelters
Here's how to cobble together a roof over your head and a way to stay warm out in the forest.

HOMESTEADING

34 Natural Remedy Garden
Here's what you can grow right in the backyard that will help treat colds, flu and more.

40 Vegetables for the Long Term
Some crops are just better suited for storage. These are the ones we recommend.

46 Simple and Effective
Water bath canning is a great way to preserve jellies, jams and so much more.

52 The Skinny on Fats
They're an essential part of a healthy diet.

DIY PROJECTS

60 Light Up the Night
Candles are easy to make at home with just a few supplies and some know-how.

66 Raise an Alarm
There are a few different ways you can set up simple devices that will alert you to an intruder.

72 Shiny!
Aluminum foil has many more uses than you might think, from cooking to crafting and more.

78 Triggered
A successful trap requires a well-made trigger that will set the trap in motion.

84 Burn It Up
A fire kit is a necessity for any outdoor adventure—and here's what to have inside it.

GEAR AND EQUIPMENT

92 New Products
The latest and greatest items on the market from our favorite companies.

96 From Tainted to Tasty
Check out our buyer's guide to water filtration and purification supplies and tools.

102 Let It Rain
Keep warm and dry, even in a downpour, with these items in our gear guide.

108 Slice and Dice
We found the Huntsman from Edge Knife Works to be a stellar addition to the lineup.

Letter From the Editor

Welcome to issue No. 26! I'm biased, but I feel like each new issue we do is even better than the one that preceded it. Our goal is always to provide you with practical and actionable information that you can really put to use. Here's a quick rundown of just some of the topics we're addressing this time around.

Growing natural remedies is a great way to increase your self-reliance skills, and we have a cool article detailing several plants to use. Speaking of plants, we have a story on how to improve your foraging abilities. Another article discusses the various uses of trees and how to decide which species are best for each duty.

Water bath canning is an excellent way to preserve some of your garden harvest, and it's easier than you might think. An important part of trapping is knowing how to make a trigger that will truly work. Learn to build an expedient shelter that will truly keep you safe and secure overnight in the field. Plus, check out our review of the Huntsman from Edge Knife Works.

Welcome to the Backwoods!

JIM COBB

The advice given in this magazine is the opinion of the author of each article based on their personal experiences and knowledge. The right response to a disaster may not be the same in all situations. Articles are for informational purposes only. The publisher accepts no responsibility for injuries or liability arising from relying upon information contained herein. In the event of an emergency, follow the advice of first responders and trained professionals. Have a preparedness plan researched from multiple sources and avoid high-risk situations. Follow all applicable federal, state and local laws for firearm ownership, carry and usage.

CHAPTER 1

OUTDOORS

HEAD OUT THERE AND HAVE FUN EXPLORING ALL THAT MOTHER NATURE HAS TO OFFER.

CRITICAL SKILLS

Master these before hitting the trail

BY JIM COBB

THE WEATHER CAN TURN QUICKLY, SO IT PAYS TO BE READY FOR IT, JUST IN CASE!

Bringing the proper gear is important, but knowing what to do with it is also wise.

MAYBE YOU'RE A BUDDING BUSHCRAFTER, STARTING OUT ON YOUR JOURNEY. OR PERHAPS YOU'RE A SEASONED PRO BUT YOU HAVE OTHERS IN YOUR CIRCLE WHO NEED SOME TRAINING AND GUIDANCE. THERE ARE CERTAIN COMPETENCIES THAT SHOULD BE PURSUED AND MASTERED, FOR PERSONAL SAFETY IF NOTHING ELSE.

The thing is, when you hit the trail you're on your own. Sure, you could signal for help if you get into a jam, but odds are the response time would be measured in hours, not seconds. And that's only once someone is made aware of your situation, which in itself might not happen quickly.

If you were to ask a random person to list wilderness survival skill sets, odds are they'll mention things like making fire, building a shelter, maybe finding food and water. Those are all important, of course. There are some others that are also critical, but might not be near the top of the average person's list.

With that in mind, let's look at four key areas in which you should strive to become well versed.

BARK RIVER KNIVES

KNIFE USE

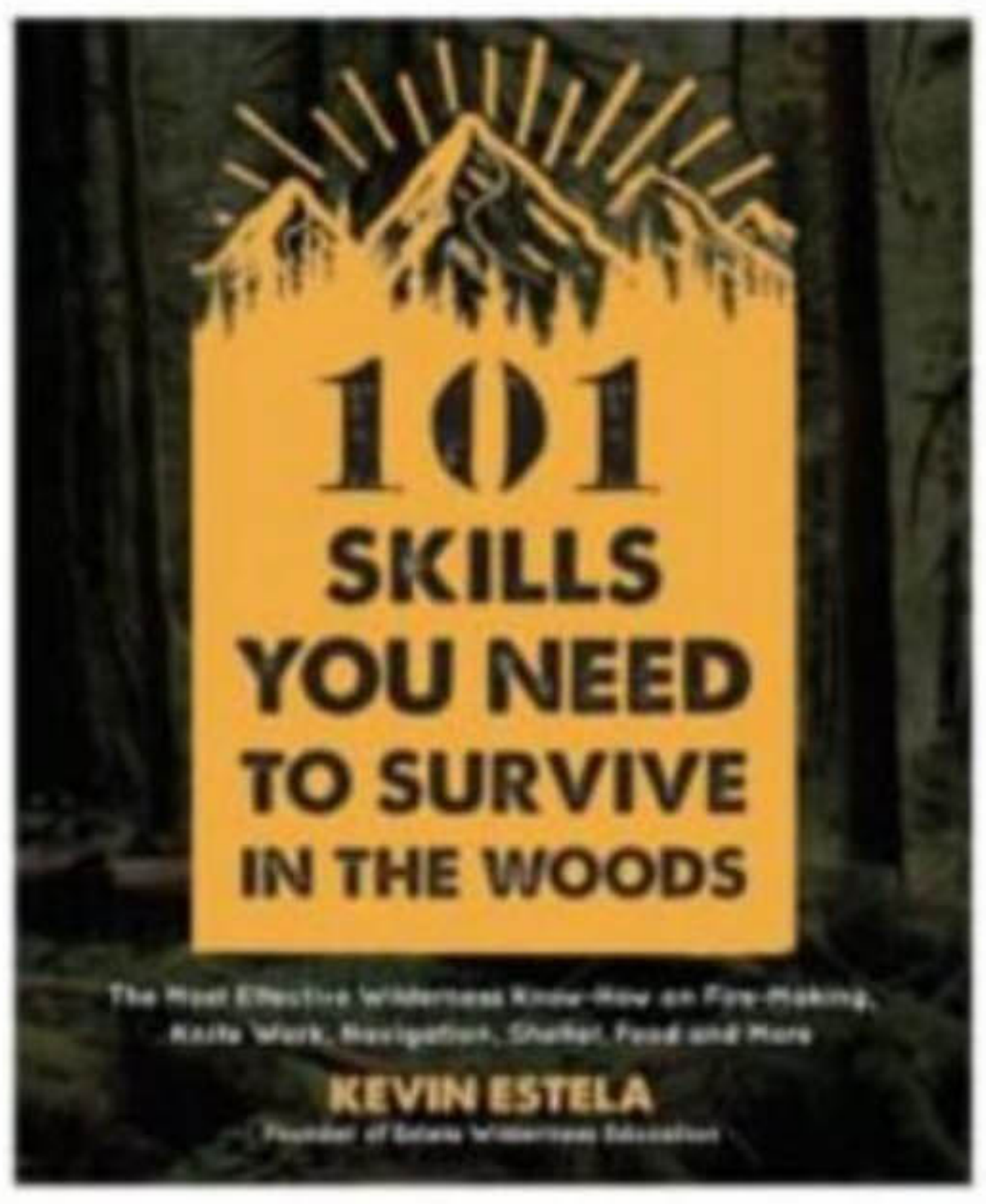
A sharp edge was one of mankind's very first tools and it has been in regular use ever since. We've come a long way since we had to fashion our knives out of obsidian or flint, though admittedly that's another skill that's fun to practice. Today's knives are made of high-quality steel and with a little shopping around you're sure to find one that fits your hand, and budget, perfectly.

While most people have at least a surface knowledge of how to use a knife safely, those uses are likely limited to either kitchen duty or opening packages. Out in the field, a knife is the primary tool for many chores and the uses go far beyond just food prep.

I've carried a knife pretty much daily since I was about 8 years old and the varied uses of the blade have become ingrained over those 40-plus years. Depending on what you're doing with the knife, there are different grips to utilize. This is especially true when you're carving or whittling, such as if you're creating a spoon to replace the one you forgot at home. With some people, shifting the knife into different positions as you work is second nature and instinctual, but for many it isn't, so learning is in order.

Other knife skills include batoning firewood as well as knowing how to maintain the knife's edge when you're away from home.

Having the skills to find your way back home could be rather important someday.



RECOMMENDED RESOURCE

101 Skills You Need to Survive in the Woods
by Kevin Estela

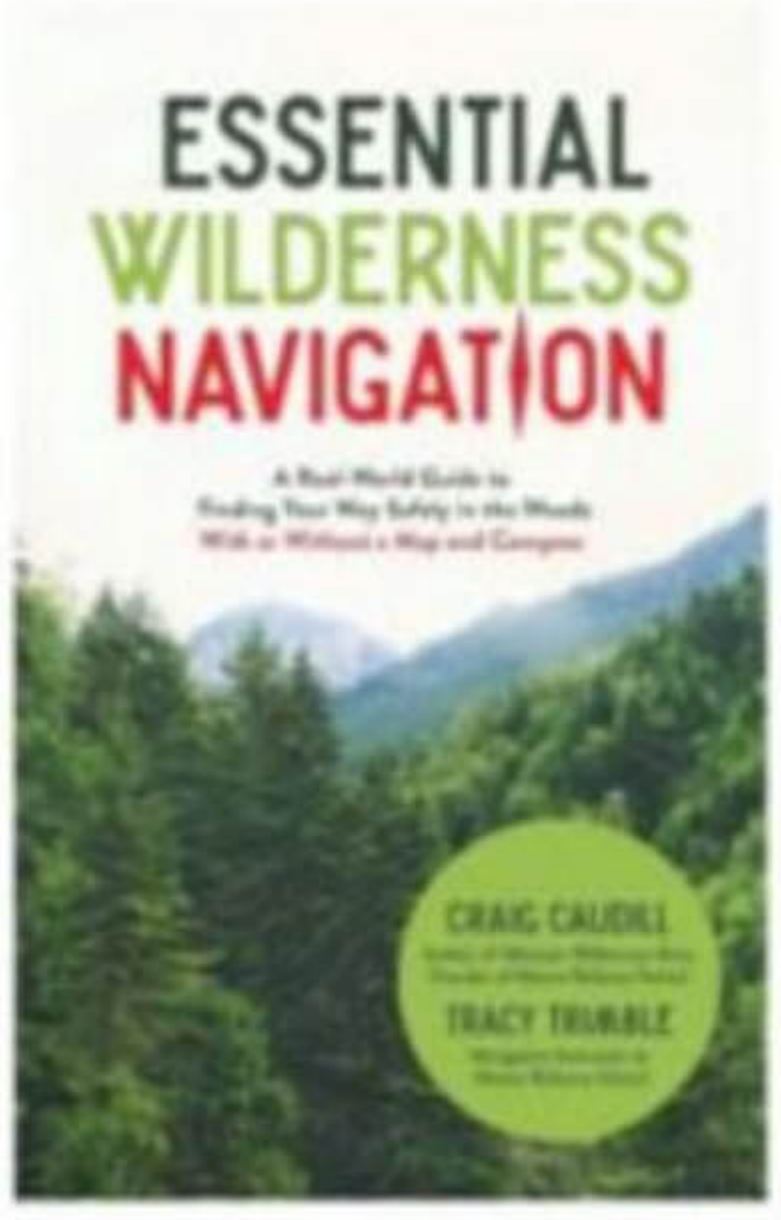
Inside this book, you'll find a great chapter on knife skills, where Estela really goes into detail on each of them, even including how to improvise a sharp edge if you find yourself knife-less.

NAVIGATION

This skill set involves being able to determine where you're currently located as well as plotting a route to get you to where you want to be next. When you venture out beyond where the sidewalks end, this could prove to be vitally important.

Today, many people rely on GPS, of course. Failing that, a map and compass are often used together to get you from Point A to Point B. However, mankind has been navigating by using the sun, stars and other indicators for centuries. Knowing how to get around using those sorts of tools means you can get where you need to be even if you're empty-handed.

Wilderness navigation isn't difficult to learn, at least in terms of the basics, though there are a few easy-to-procure tools that you'll want to purchase, including maps (topographic and others) of the area you plan to explore. Start small with plotting and following simple routes to get your feet wet, then go from there.



RECOMMENDED RESOURCE

***Essential Wilderness Navigation* by Craig Caudill and Tracy Trimble**

This book is incredibly detailed, yet easily accessible to anyone who wishes to learn basic and advanced skills in navigation.

Most of us can probably figure out how to handle bumps and bruises, but serious injuries require serious knowledge.

FIRST AID

Truth be told, this isn't strictly a wilderness-oriented skill and is an area of knowledge everyone should pursue, regardless of vocation or hobby interests. That said, there's a fundamental difference between having someone in your family or group experience a medical emergency when you're a two-day walk from the nearest ambulance, versus having that same emergency happen in your living room. The stakes get higher the farther you are from help.

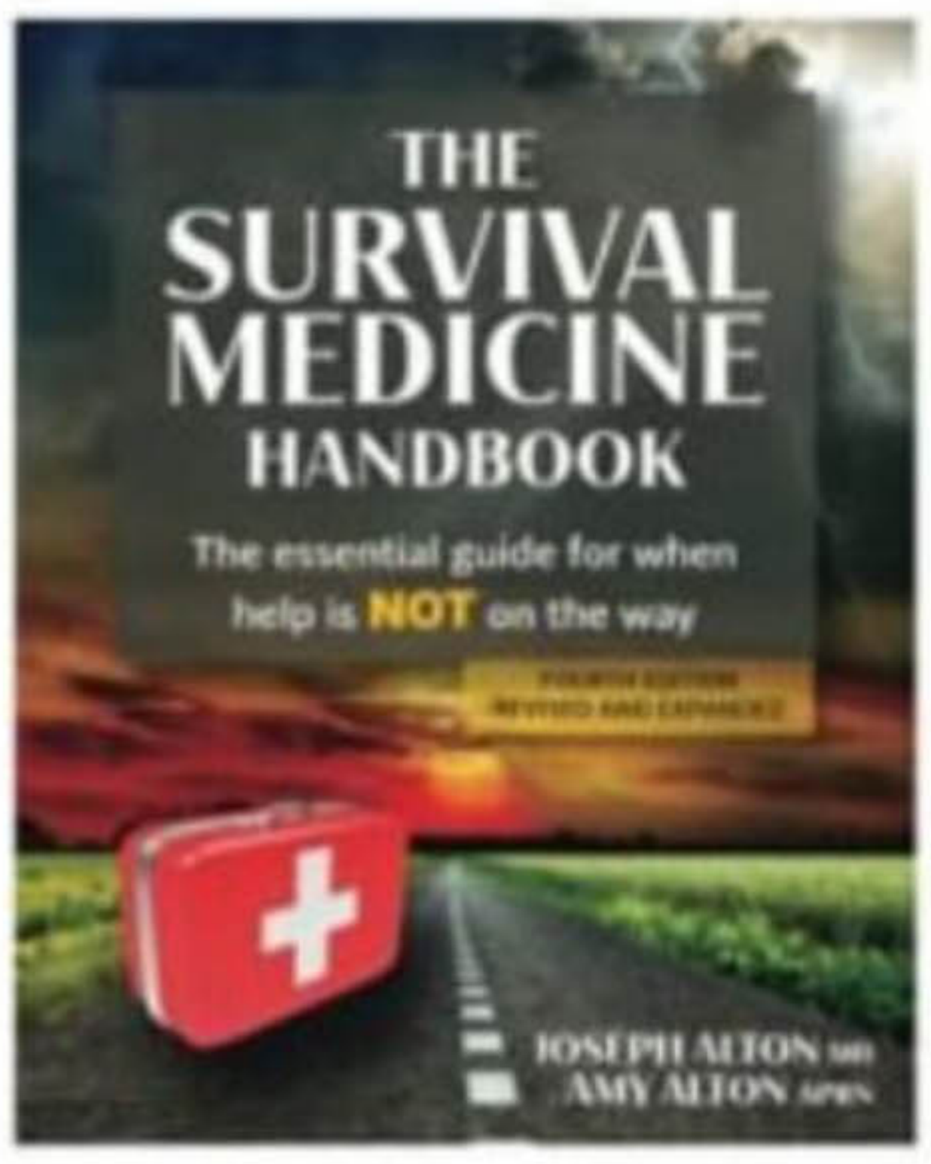
Common injuries in the field include:

- Sprains and strains
- Fractures
- Burns
- Cuts and scrapes

Infection can set in if wounds aren't treated properly and kept clean, making a bad problem even worse. There's also the risk of illness, such as from drinking untreated water.

While many of us pack a first-aid kit when we plan to be gone for more than an afternoon, all too often that kit consists of about 87 adhesive bandages of varying sizes and not much else. And those who carry more robust first-aid kits sometimes don't know how to actually use a lot of the components found inside. Don't let that be you.

The thing is, once you know how to use the proper approach and supplies to treat a certain type of injury or illness, you're also in a good position to be able to brainstorm an improvised solution, should that be necessary.


THE SURVIVAL MEDICINE HANDBOOK
The essential guide for when help is NOT on the way
JOSEPH ALTON MD
AMY ALTON APRN

RECOMMENDED RESOURCE

***The Survival Medicine Handbook (fourth edition)* by Joe Alton, MD, and Amy Alton, APRN**

This is a massive volume, with nearly 700 pages. But it covers every common injury and ailment, along with a whole bunch more that might not be experienced as often but are still important to know how to handle.

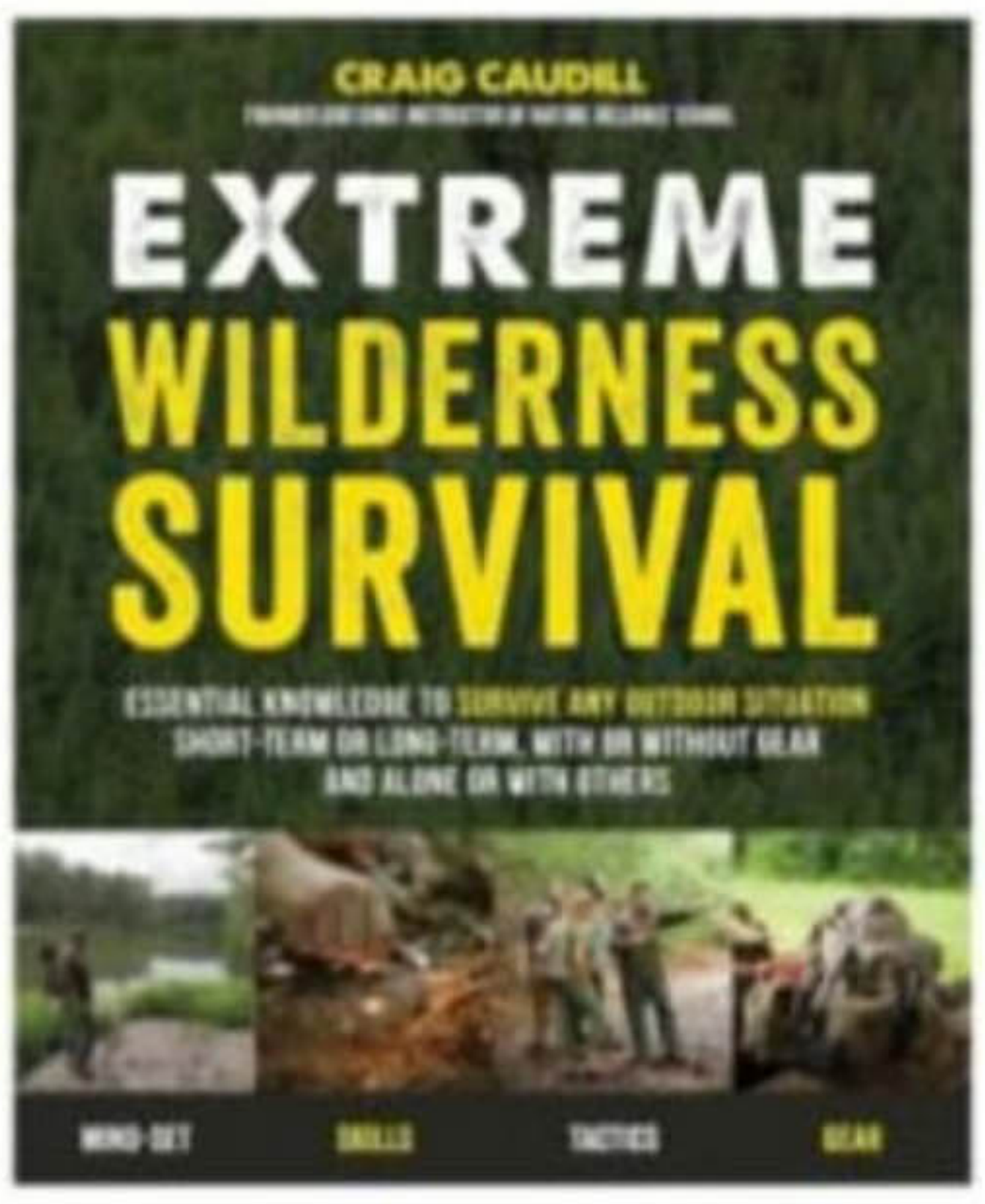
MINDSET

This might be the most important skill set of them all. The single most important survival tool at your disposal rests between your ears. Like any tool or piece of gear, you need to know how to use it in order to get the most benefit from it.

Some aspects of the proper mindset include situational awareness, adaptability, positive thinking and mental fortitude. There are all sorts of ways to work on these areas, from games you can play by yourself or with others to repeated practice until they become just part of who you are.

You need to have your head in the right place if you're going to survive.

Related to this is understanding how your mind works, part of which involves knowing the ways you learn best. Some people are visual learners, those who learn best by watching. Others are kinesthetic and need a tactile experience to really cement the information in their mind. They learn by doing. There are also auditory learners and reading/writing learners. Knowing the way in which you lean will benefit you as you can then tailor your research to take the best advantage of that style of learning.

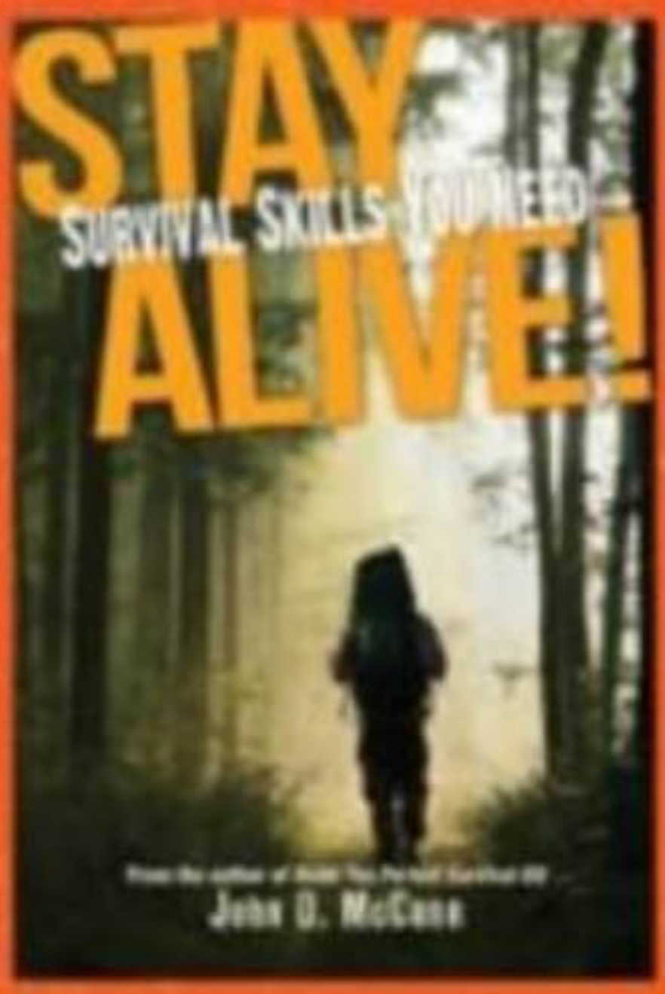


RECOMMENDED RESOURCE

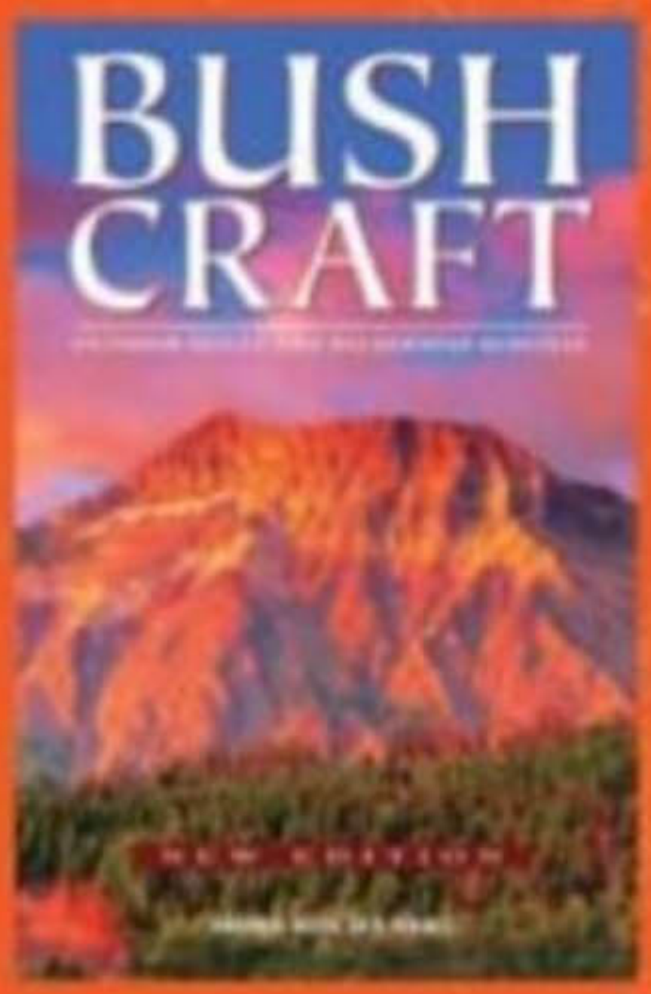
***Extreme Wilderness Survival* by Craig Caudill**

In this book, Caudill devotes a full five chapters to the concept of mindset and how to develop it properly. I would also suggest reading *The Unthinkable* by Amanda Ripley. She goes into great detail about how the mind and body work together (or sometimes act seemingly at odds with one another) during a crisis and what you can do about it.

ADDITIONAL READING RECOMMENDATIONS


STAY ALIVE!
SURVIVAL SKILLS YOU NEED
John D. McCann

Stay Alive!
by John D. McCann



Bushcraft
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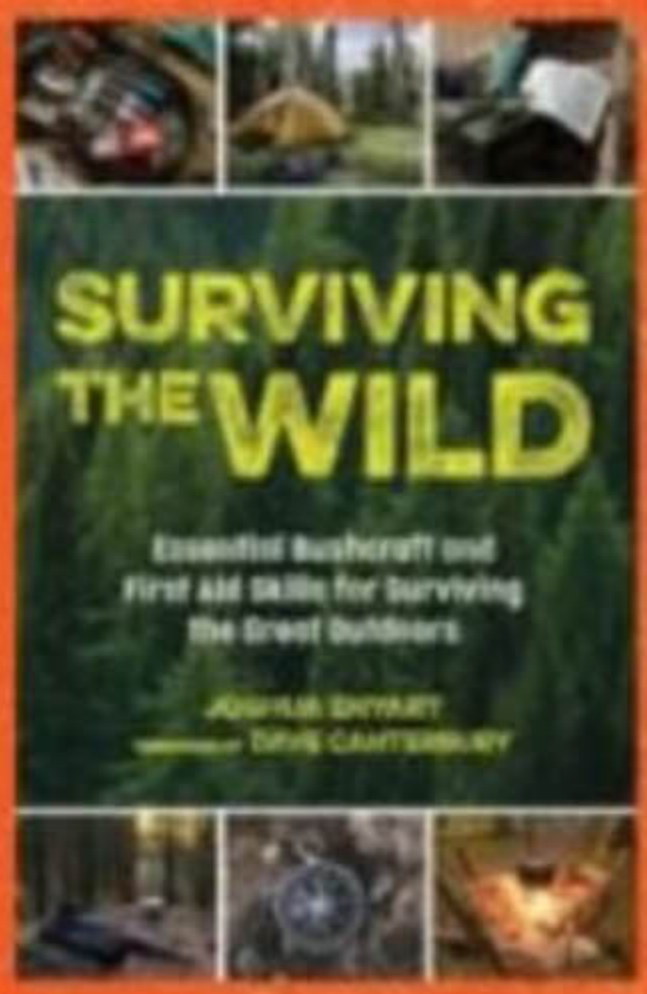
SURVIVING THE WILD
Essential Bushcraft and First Aid Skills for Surviving the Great Outdoors

Surviving the Wild
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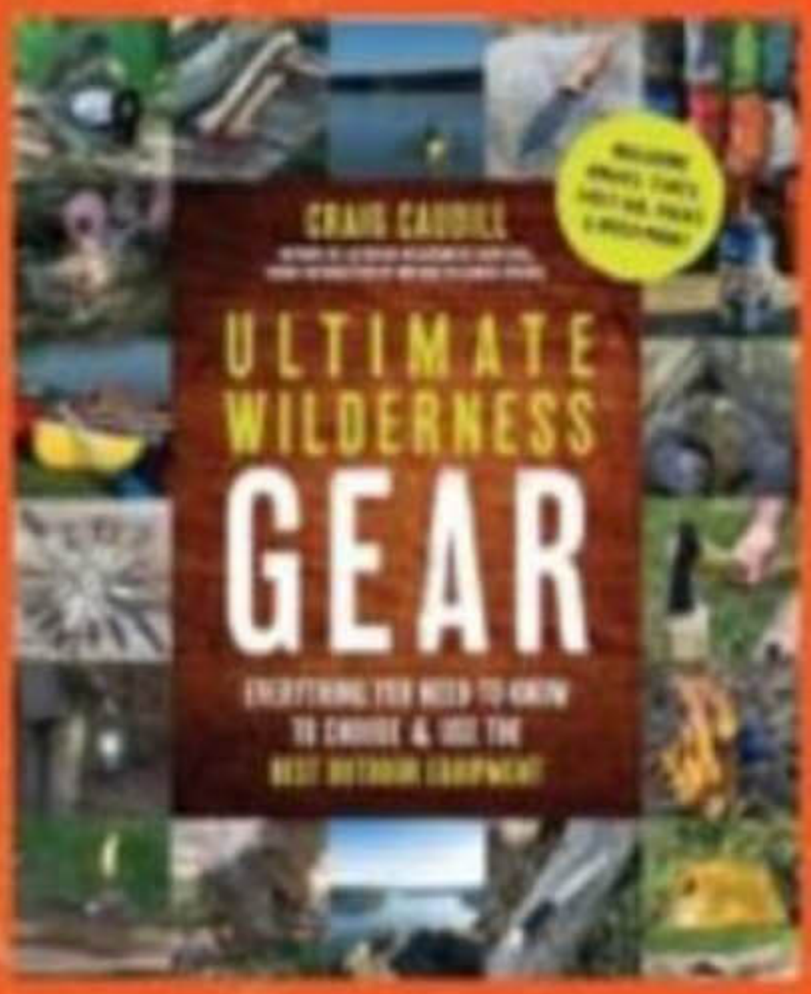
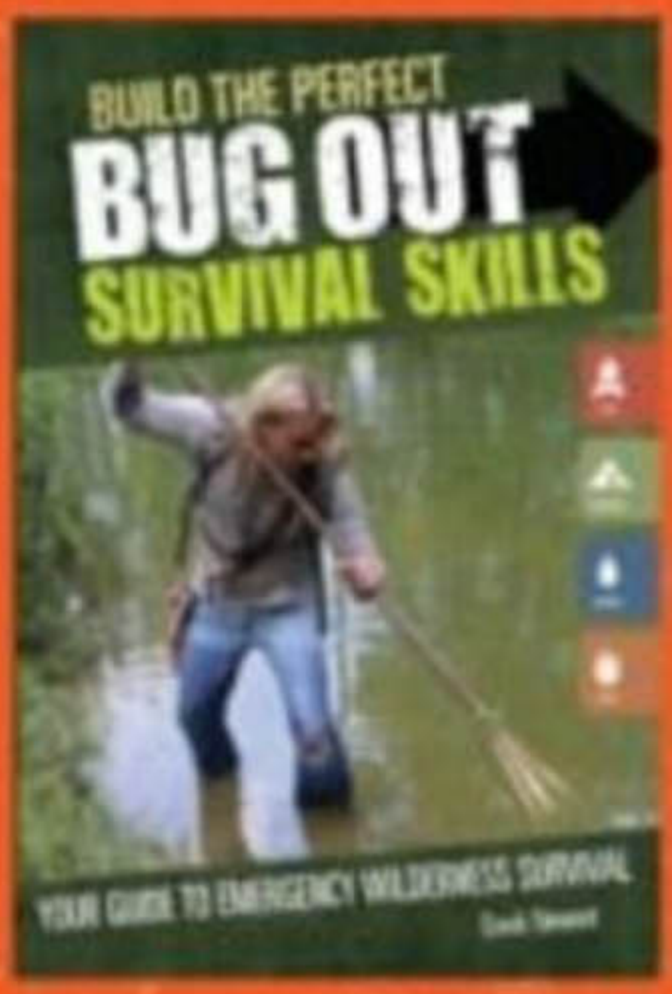
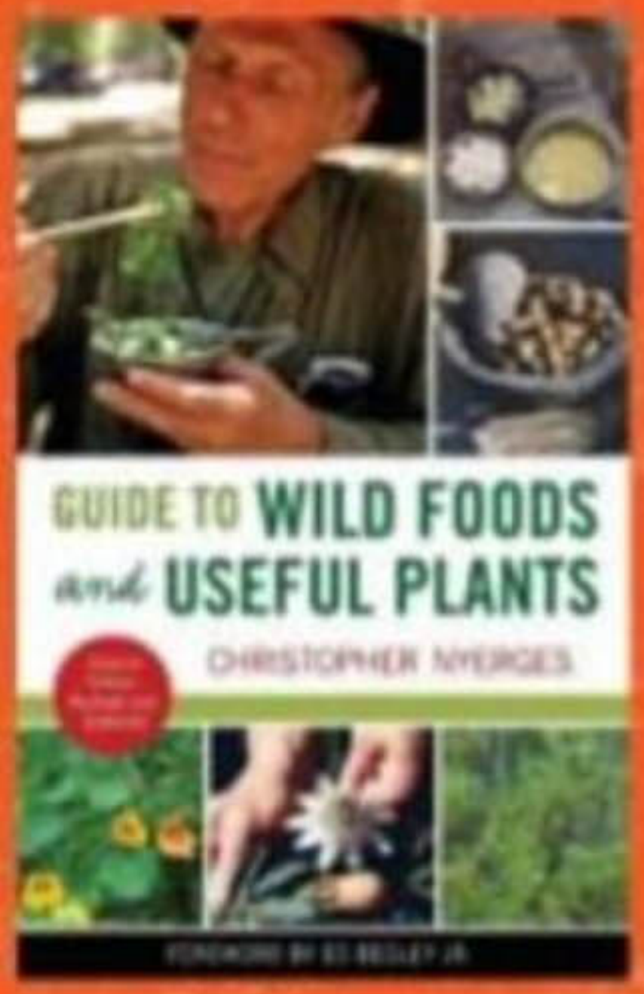

CRAIG CAUDILL
ULTIMATE WILDERNESS GEAR

Ultimate Wilderness Gear
by Craig Caudill


BUILD THE PERFECT
BUG OUT
SURVIVAL SKILLS
YOUR GUIDE TO EMERGENCY WILDERNESS SURVIVAL

Build the Perfect Bug Out Skills
by Creek Stewart


GUIDE TO WILD FOODS and USEFUL PLANTS
CHRISTOPHER NYERGES

Guide to Wild Foods and Useful Plants
by Christopher Nyerges

Books are excellent resources for learning, but you do actually have to read them in order to acquire the knowledge inside.

HARVESTING FOOD IN THE FIELD IS MADE EASIER WITH A GOOD KNIFE IN YOUR HAND!

Fungi can be tricky, so be absolutely certain of your ability to identify them before consuming any you find.

FORAGE WITHOUT FEAR

Finding a meal in nature

BY REUBEN BOLIEU

WITH THE PROPER KNOWLEDGE AND CONFIDENCE, YOU CAN SELECT AND CONSUME NATURALLY SOURCED FOOD WITHOUT WORRY OR FEAR. IT IS ESSENTIAL TO BE ASSERTIVE IN YOUR APPROACH AND TRUST YOUR ABILITIES TO MAKE THE RIGHT CHOICES WHEN SELECTING WILD FOOD.

The long-awaited arrival of spring is finally upon us, and with it comes a vast array of mouthwatering wild plants just waiting to be savored. The earthy taste of garlic mustard and ramps makes these greens the perfect addition to any savory dish. The vibrant, sunny yellow petals of dandelions provide a burst of color to a salad. At the same time, tightly coiled fiddleheads offer a unique and satisfying crunch when sauteed to perfection. And of course, no trip to forage wild plants in spring is complete without the exciting hunt for morel mushrooms—with their distinctive honeycomb cap and rich, meaty flavor, they are a highly sought-after delicacy. So, put on your walking shoes and head to the woods to indulge in the abundance of wild plants this season has to offer!

WAZOO GEAR FORAGING BANDANNA

Shown on page 14, the Foraging Bandanna is a multipurpose tool that can serve as a learning primer, field aid or emergency reference. It features the 12 most common wild plants and fungi found in North America, along with icons indicating their uses, making it safe and easy to forage in the backcountry or backyard. Whether you're a seasoned forager or just starting, this wearable tool can educate, encourage and help you share your passion for foraging with others. It was designed in collaboration with some of the best foraging instructors to ensure its accuracy and usefulness.

Features

- 12 designated uses with icons.
- Five steps for identifying edible plants.
- Rules and ethics of foraging.
- Includes common and scientific names.
- Features accurate botanical illustrations.
- Made and printed in the USA.

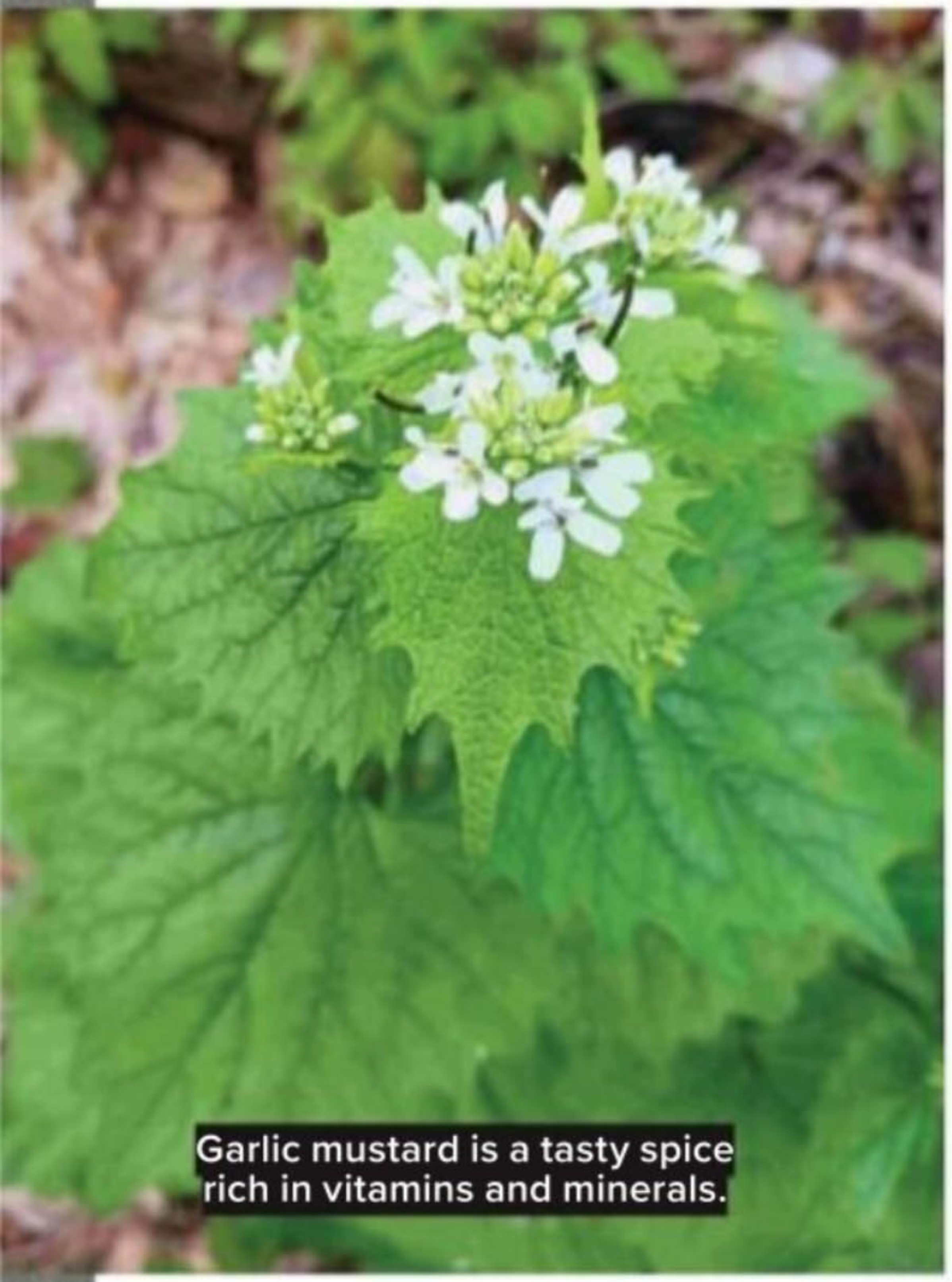
Find it at *wazoogear.com.*

IDENTIFY

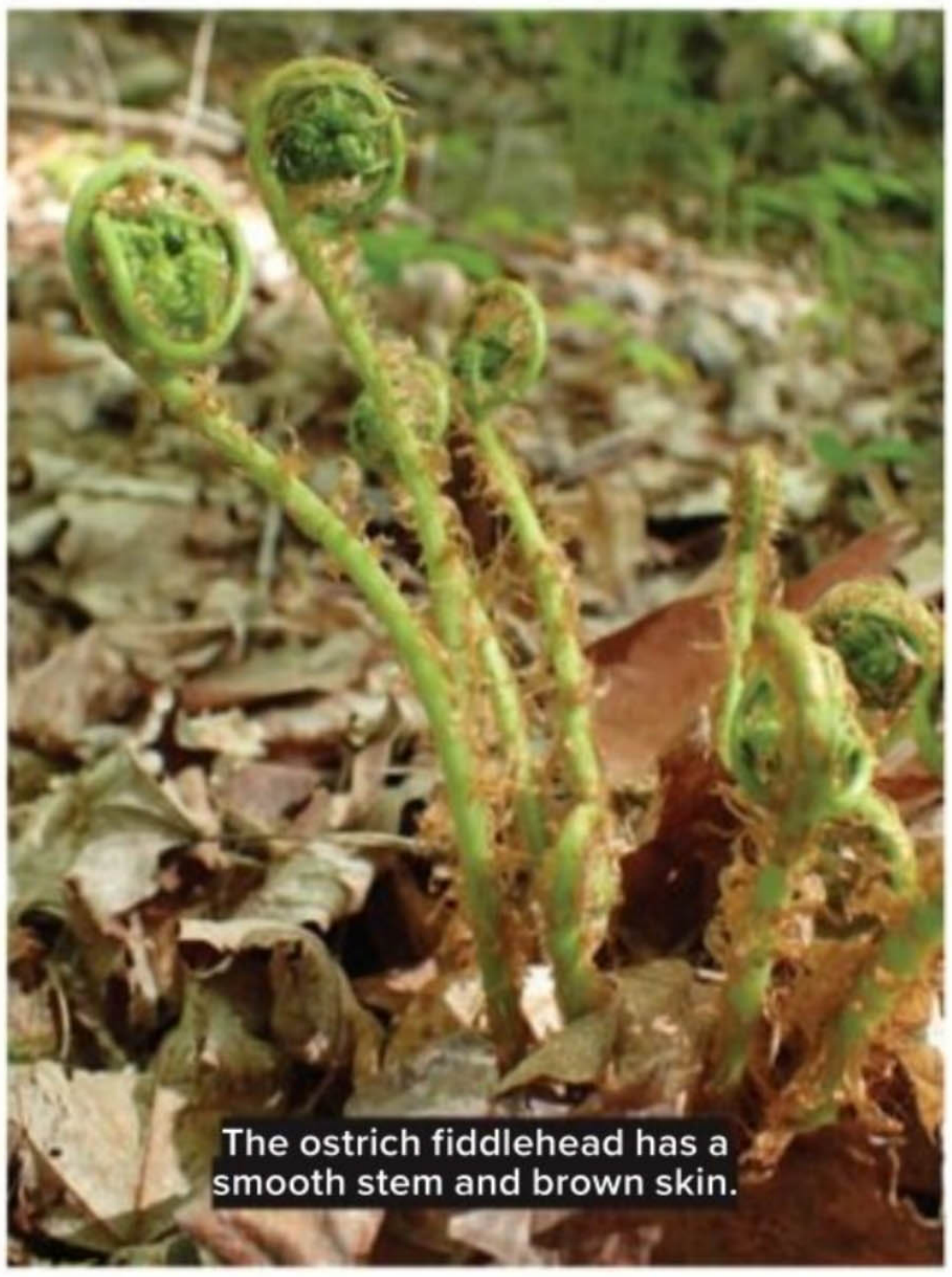
Foraging wild edibles can be risky, so it's crucial to take safety measures to avoid potential harm. Always confirm the identification of wild edibles with at least three reliable sources, and seek an expert's opinion to ensure their safety. When dealing with mushrooms, use photos and videos as aids. Stick with easy-to-identify wild edibles that have little to no poisonous look-alikes, such as the ones listed here (except for morels). Keep in mind that foraging can be enjoyable and fruitful. Still, it's always important to prioritize safety first and consult a knowledgeable source before you consume wild plants.

PRICKLY PEAR

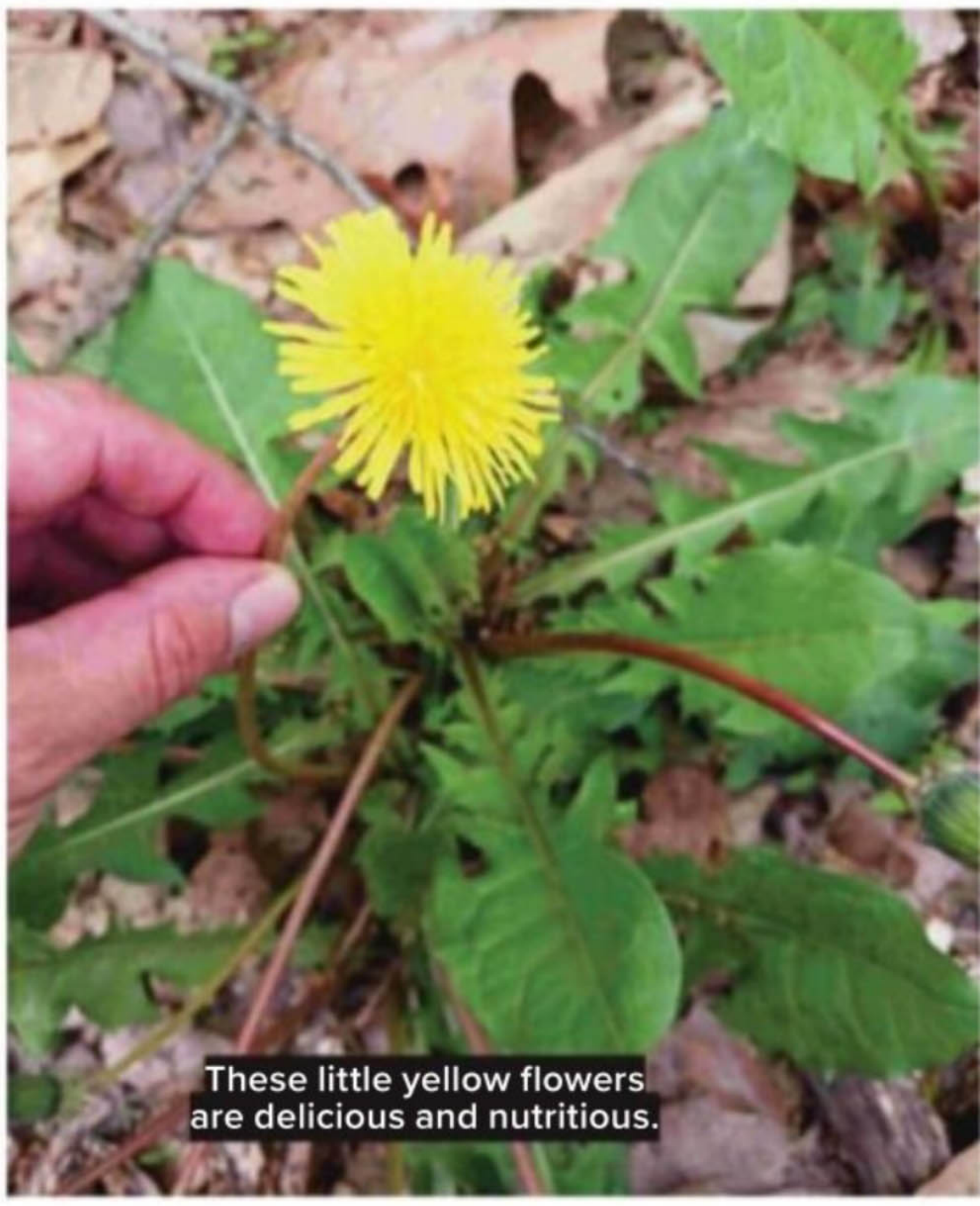
Appearances can be deceiving when it comes to wild edibles. One example is the prickly pear cactus. Although its spiny exterior may seem intimidating, the pads and fruits are a great source of vitamins A and C. To prepare the pads for consumption,



Garlic mustard is a tasty spice rich in vitamins and minerals.



The ostrich fiddlehead has a smooth stem and brown skin.



These little yellow flowers are delicious and nutritious.

The author holds a giant oyster mushroom in the Northeast. They range in size and species and can be cooked in various ways.

YOU WON'T GO HUNGRY IF YOU'RE PAYING ATTENTION TO WHAT'S AROUND YOU!

harvest them when they're young—in late spring and early summer—and measure 5-7 inches long. Remove the spines and thoroughly rinse them, then cut into strips and boil for 15-20 minutes. The resulting dish can be eaten alone or mixed with eggs and sausage for a tangy flavor reminiscent of lemony green beans. Additionally, the pads can be roasted on hot coals for a satisfying snack.

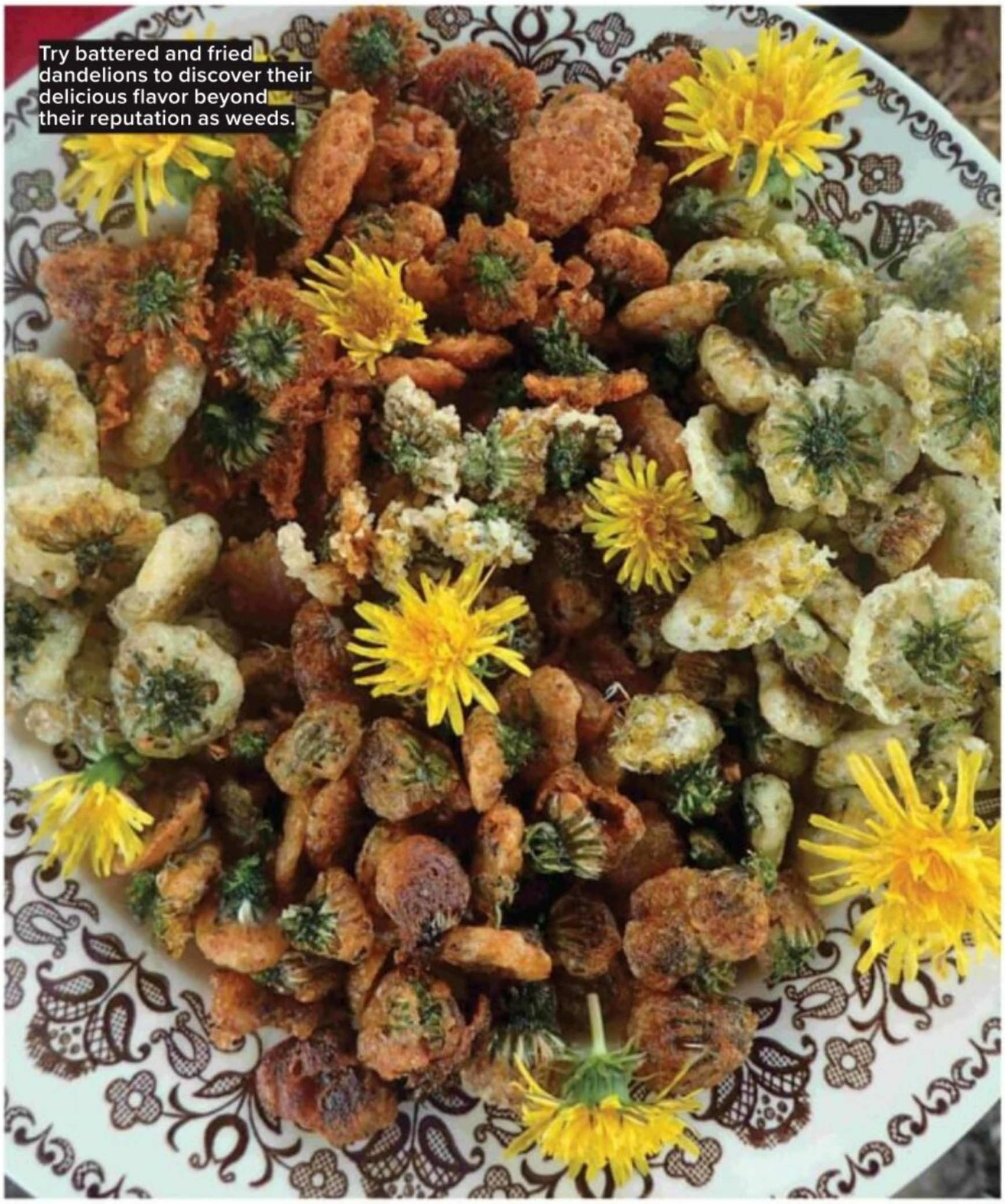
FUNGI

It's crucial to exercise utmost care while identifying fungi. This section should be considered a mere starting point, and it's highly recommended to obtain confirmation from at least three different sources—including an experienced person, a spore print and reference materials—before trying to identify anything you find.

Morels are a type of mushroom known for its delicious taste and high price tag. They are considered among the most elusive fungi, as they can be challenging to find in the wild. Morels come in two main varieties: yellow (Morchella esculentoides) and black (Morchella angusticeps).

Morels can be found all over the Northern Hemisphere, especially in North America, and they also grow in Asia and Europe. They are most commonly found in forested areas around elm, poplar and ash trees. They can also be found in other regions, especially in sandy woodlands. Morels grow under objects such as decomposing leaves because of the dampness. Their spore print is creamy white or pale ochre.

- **Yellow morels** have a distinctive honeycomb-like upper portion with a network of ridges and pits, making it look a bit like a sponge. The cap color of these morels varies from pale cream to ochre to yellow. When young, it is brown, and the ribs along the ridges are usually somewhat paler than the interior of the pits. The caps are tightly attached to the stem, and when cut lengthwise, they will be hollow from the bottom of the stem to the top of the cap, with a rubber



Try battered and fried dandelions to discover their delicious flavor beyond their reputation as weeds.

mold look to it. The base is typically white or sandy-colored and sometimes marked with brown blotches near the bottom, and the flesh is tough and hollow. The height of morels can vary due to growing conditions and at what growth stage they are when you find them. Typically, they grow to about 5 inches tall.

- **Black morels** generally appear two weeks before the yellow morels. Their cap color is usually darker than that of yellow morels, and the caps themselves tend to be shorter and more cone-shaped.

It is important to note that there are false morels that are not edible. These caps are wrinkled, not pitted, and the cap hangs freely over the stem. Eating false morels can be fatal and has resulted in recorded deaths. It's absolutely crucial to learn how to identify the real morels before consuming them.

- **Oyster mushrooms** are a delicious and nutritious variety of fungi that can be found in the wild or cultivated. They have a mild flavor and delicate texture, and are packed with nutrients such as protein, iron and antioxidants. They are easy to identify due to their distinctive fan shape and creamy white to light-brown color. They grow on dead or dying hardwood trees, stumps and logs, mainly beech, aspen, oak and maple trees. In addition, they can also be found growing on straw or composted materials. When foraging for oyster mushrooms, look for clusters of fan-shaped caps attached to a central stem. Be careful not to confuse them with other similar-looking mushrooms, as some can be toxic. Pro tip: Look for a fishy scent and white spore print.

FIDDLEHEADS

To enjoy the delicacy of fiddleheads during the early spring months, look for the young, coiled fronds from ostrich ferns. These can be distinguished by a brown, papery, scale-like covering on the uncoiled fern, a smooth stem and a deep U-shaped indentation on their inner stem. Find clusters of three to 12 fiddleheads per plant growing near rivers and streams, and in the woods during late April to early June. To cook them, rinse them in cold water and remove the brown husks. They can be boiled or steamed, but be careful not to overcook them, or they'll become mushy. They're also tasty seasoned with butter, lemon, garlic and herbs, and sauteed or grilled to bring out their flavor, similar to asparagus or broccoli.

GARLIC MUSTARD

Get creative in the kitchen by serving garlic mustard to incorporate more nutrients into your meals. This leafy green vegetable can be enjoyed raw or cooked and makes a great addition to salads, sandwiches and wraps. Saute it with onions, mushrooms and peppers for a flavorful side dish. When identifying garlic mustard, look for its heart-shaped leaves with coarse, toothy edges and small white flowers clustered at the top of its stem. It is commonly found in wooded areas, roadsides and fields, but avoid harvesting it from areas where chemicals have been sprayed, which can reduce its nutritional value.

DANDELION

Consider adding dandelions (Taraxacum) to your diet, as they are a common and safe wild edible. Despite being classified as a "wild" plant, they are highly adaptable and can flourish in various environments. The plant's jagged-edged, vibrant green leaves form a rosette, adding character to its overall appeal. After blooming, the flower's petals fall away, leaving a fluffy seed head ready to be carried away by the wind.

Dandelions can be used in several dishes. The leaves are ideal for salads, providing a slightly bitter taste that pairs well with other greens. The roots can be roasted and used as a coffee substitute—an excellent option for reducing caffeine intake. For an adventurous treat, you can even make dandelion wine. Exercise caution and ensure the dandelions you use have not been treated with harmful chemicals before consumption. Next time you encounter a dandelion, consider its possibilities as a new and exciting meal ingredient.

The author loves cooking with nopales, a cactus found in the Southwestern US. They require minimal preparation—just remove the spines, boil, slice and fry.

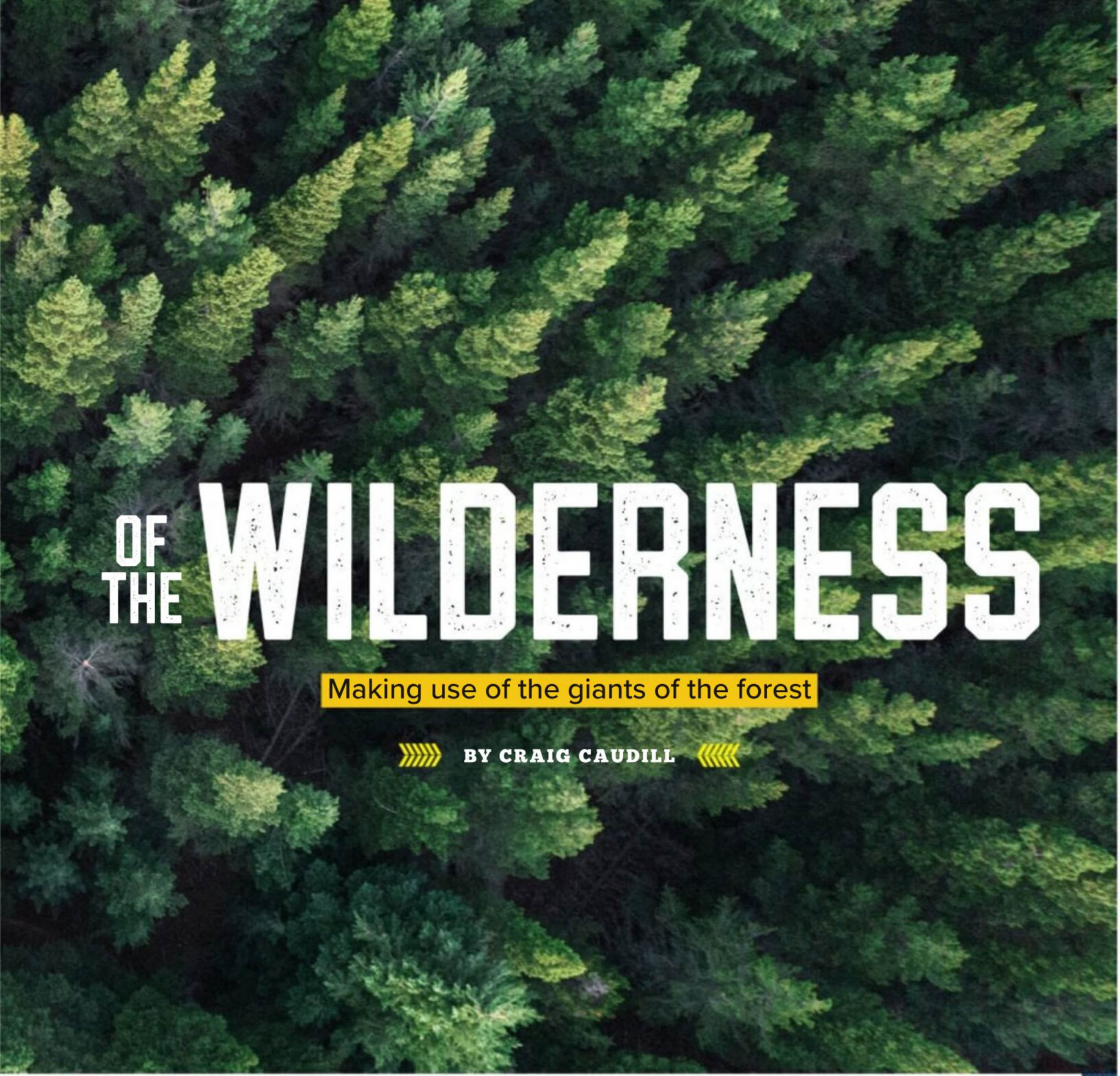
Reuben Bolieu is a passionate adventurer who explores remote places across the globe. He shares his expertise in survival techniques and woodcraft through his acclaimed writing and photography, and shares his knowledge in survival classes and outdoor magazines.

They may tower over us, but they can be some of our best friends when we're in the woods.

MULTITOOLS

THERE ARE JUST SOME THINGS I WILL NEVER FORGET. YOU ALL DON'T KNOW MR. SOLOMON, MY EIGHTH GRADE SCIENCE TEACHER, BUT YOU WOULD HAVE LIKED HIM. HE LOVED SHARING SCIENCE WITH KIDS AND INFECTED ME WITH SOME OF HIS FASCINATIONS.

One lesson he shared with us was on the Btu content of wood. At that time, I thought trees were just trees and wood was just, well, wood. Thank you, Mr. Solomon, for helping me discover what is out there. The forested landscape offers abundant resources. Trees are indispensable with their varied species and unique characteristics. From firewood to shelter construction and some good whittling opportunities, each tree species provides distinct benefits that make your wilderness experience efficient, productive and sustainable.



OF THE WILDERNESS

Making use of the giants of the forest

BY CRAIG CAUDILL

Understanding the nuances of tree species can significantly improve all of your wild woodcraft, ensuring both efficiency and safety.

FIRE

Birch trees are fantastic resources, but they don't grow in my neck of the woods, which disappoints me. If you have these growing around you, you are fortunate. Recognized by their distinctive white bark, birch trees are excellent for fire-making. The bark contains oils that quickly catch fire, making them invaluable. However, it's crucial to remember that while they ignite quickly, they also burn out fast. You can also peel off large sections of the white outer bark when a tree has fallen and use it as a roofing material on primitive shelters and any container you might need. They often have chaga mushrooms growing on them, which make for an excellent fire tinder as well as a hot drink additive.

Oak is a dense hardwood prized by this author for its slow-burning attributes. When looking for a fire that provides prolonged warmth, oak should be one of your go-to tree species. It keeps the cold at bay and creates a consistent bed of hot coals, perfect for cooking. Acorns are oak seeds that are suitable food for many wildlife species. That means they attract wildlife for us hunters and trappers. We can also use acorns as food, but they require you to boil them in a few water changes to remove the bitter tannins.

KNOWING WHICH SPECIES WORK BEST FOR CERTAIN TASKS OR ROLES CAN MAKE LIFE EASIER WHEN YOU'RE SPENDING TIME IN THE FOREST.

Pine is a softwood that offers quick ignition due to its sap-rich content. However, its fast burn and higher creosote production make it less suitable for cooking. It will stain the bottom of your cookware rather quickly. It's essential to be aware of the soot and creosote that pine can leave behind, as this can clog chimney flues in domestic settings. But I love finding pine and other resinous trees that I can use to start fires before adding long-burning wood sources that make it last longer.

SHELTER

If you read this magazine, I am sure you know that building a shelter is the foundation of a comfortable wilderness stay. A dependable shelter is crucial in the wilderness, and the choice of wood can dictate the shelter's durability and longevity.

Cedar trees are the unsung heroes of shelter construction. They are termed "pioneer species" because they pop up early in clear-cut areas or are allowed to regrow after agricultural use. If other trees have grown around them, they have done their job, and you can harvest them. I like to hinge-cut them and create an immediate live shelter. A hinge cut is like a giant "V" shape, so the wood is still connected when it falls and it will continue to grow. You can clear away some branches on the ground and immediately shelter from some elements. Add more branches and leaves to the top to create a better wind and water barrier.

Spruce is another tree common in many Northern woodland areas. Spruce trees are flexible, which is especially valuable when crafting the curved supports of

There is nothing quite like harvesting tools after a storm has knocked down trees that you can use.

a shelter. The strength of spruce ensures a sturdy base, while its abundance guarantees easy availability.

Much like spruce, pine is a flexible wood. Its branches, laden with dense foliage, can serve as an excellent makeshift roof and provide insulation and protection from the elements. My students and I have often used pine and hemlock boughs as bedding to keep us off the cold or damp ground during survival training.

MAKING TOOLS

Trees are not just about survival, but also about craftsmanship and creating valuable tools, learning to use your tools and teaching knife safety to others.

Basswood and cottonwood are commonly used in the carving community. They both stand out due to their soft nature and consistent grain. This combination ensures smooth carving with minimal unexpected splinters or breaks. I have made many spoon and fork sets from these two species. You can make them out of hardwood, which will last longer, but I like continuing to practice my skills, so basswood and cottonwood serve me well.

Cherry is only slightly more challenging to carve than basswood. Cherry wood rewards with its aesthetic appeal. It takes on a rich reddish hue as it ages, making the objects crafted from it look even more fantastic.

BEING ABLE TO FASHION YOUR OWN UTENSILS IN THE WILD IS A GREAT SKILL!

Using softer woods makes it easier to carve tools like spoons and forks.

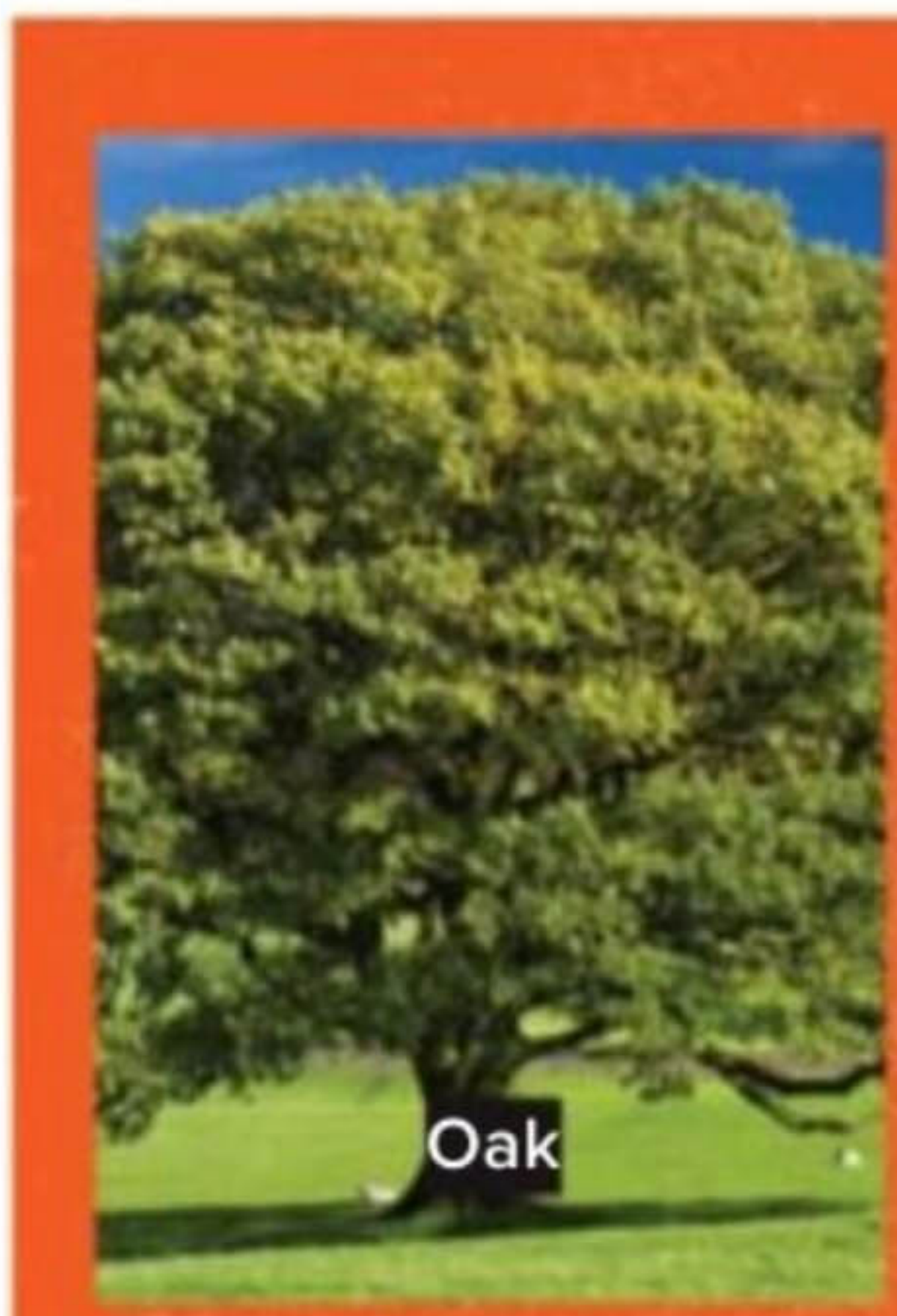
Maple has a tight and consistent grain, offering a better balance between ease of carving and durability. Whether you're crafting a utensil or a decorative piece, maple ensures longevity without compromising on the ease of crafting.

Let me be frank here. You are here reading this article and the rest of this magazine because you want a deeper understanding of the outdoors and self-reliance in some way. Due to urbanization, we are increasingly distancing ourselves from nature, even if unintentionally. Stepping into the wilderness reminds us of our roots and the multifaceted utility of trees. With each species and unique characteristics, these natural giants can be great accomplices in getting us outside to do things safely and efficiently and have more fun.

However, as we reconnect with the outdoors and marvel at the offerings of these tree species, it's essential to remember the principle of responsible use. Let's ensure we do so thoughtfully in our eagerness to explore and utilize. Embracing the wilderness is as much about enjoying its gifts as it is about ensuring we leave minimal impact, letting future generations experience the wonder that is nature.

In summary, trees are more than passive entities in our wilderness sojourns. They are vital tools, creativity builders and testaments to nature's bounty. As we increasingly recognize the need to get in touch with nature, let's do so with knowledge, respect and a sense of responsibility.

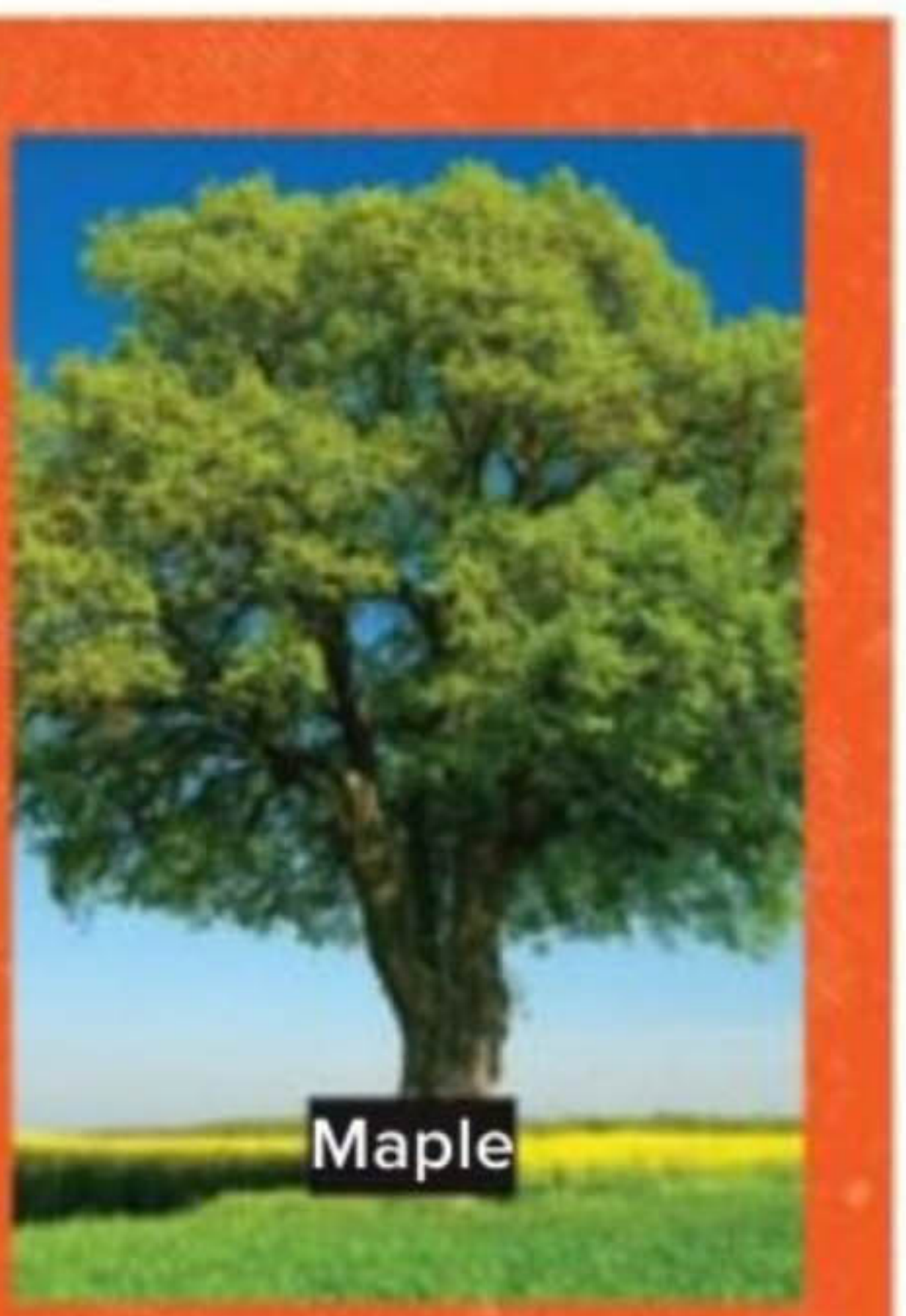
PRACTICE CARVING AND MAKING TOOLS WELL BEFORE YOU MIGHT NEED THAT SKILL FOR REAL, AS IT ISN'T ALWAYS AS EASY AS IT LOOKS.


Oak

Pine

Tulip Poplar

Birch


Maple

WINTER TREE ID

Utilizing trees in winter can prove problematic because most people identify trees by their leaves. However, there are multiple ways to identify trees, and I will highlight a few valuable species here.

Oaks Red oak leaves are pointed, while white oak leaves have rounded edges. The bark is diverse across species, but the red oaks generally have darker and tighter bark, and the bark of the white oak is not as tight and much lighter. They have bud clusters at the terminal end of branches that help identify them in winter.

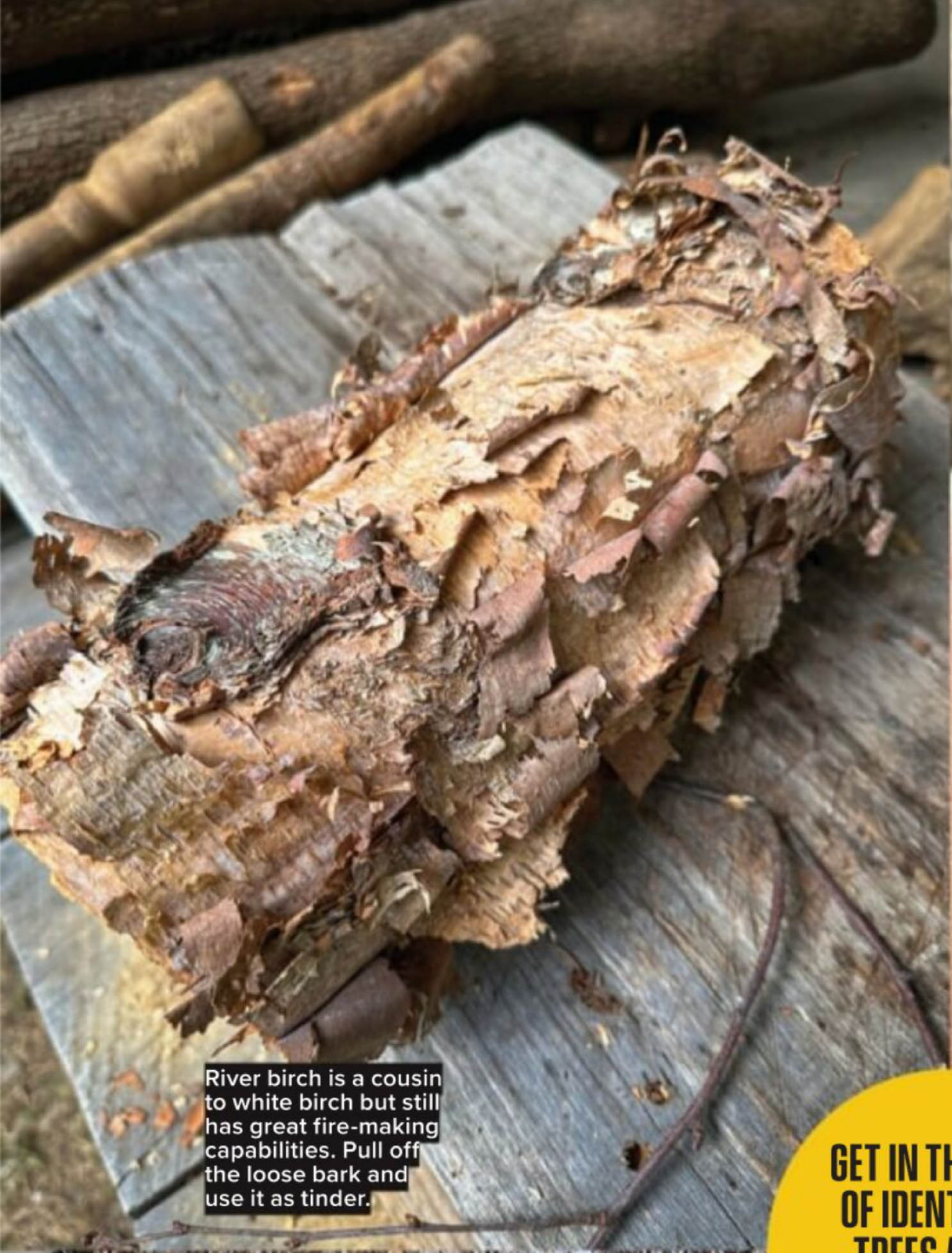
Pines These trees' needles come in clusters. White pine needles come in bundles of five. Yellow pine needles come in bundles of two and are curled. White pine makes a tastier tea than other species.

Tulip Poplar This tree has huge leaf scars (the spot left behind when the leaves fall). The inner bark of dead poplar trees makes an excellent fire tinder.

Birch I mentioned the highly visible white bark on birch trees. This will stay white even long after it has died. This makes it easy to spot in the forest when you need to locate one for tinder or other purposes.

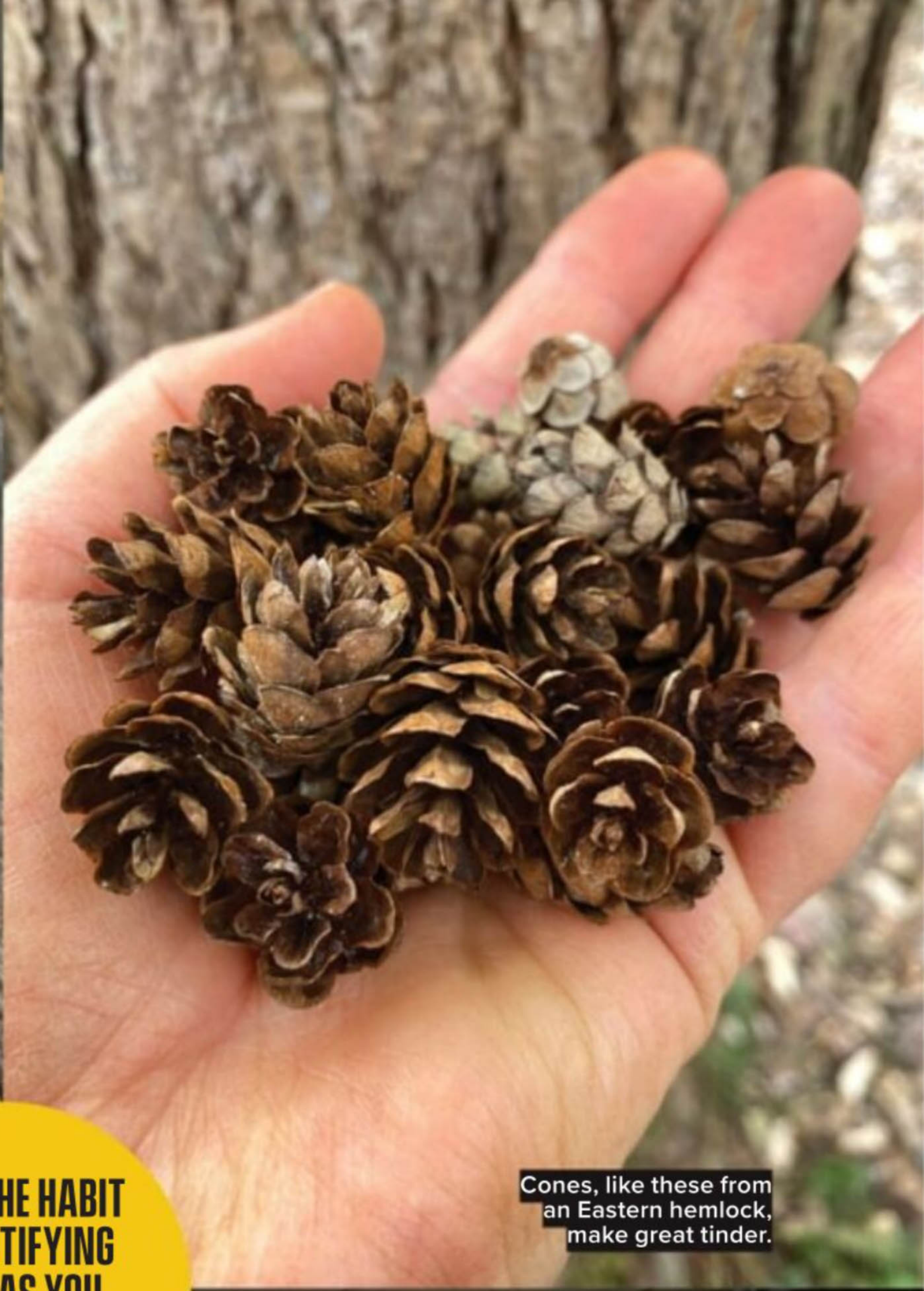
Maples These are easy to identify. They are one of the MAD BUCK trees that have opposite branching. MAD BUCK is a mnemonic device that stands for maple, ash, dogwood and buckeye. All of these species have leaves and leaf buds in the winter that branch from the stem opposite from one another, rather than alternating. Knowing the mnemonic will help you identify them.

Craig Caudill is the award-winning educator and director of Nature Reliance School. He is also a bestselling author and teaches courses online and in person. You can find all of his educational opportunities at naturereliance.org.

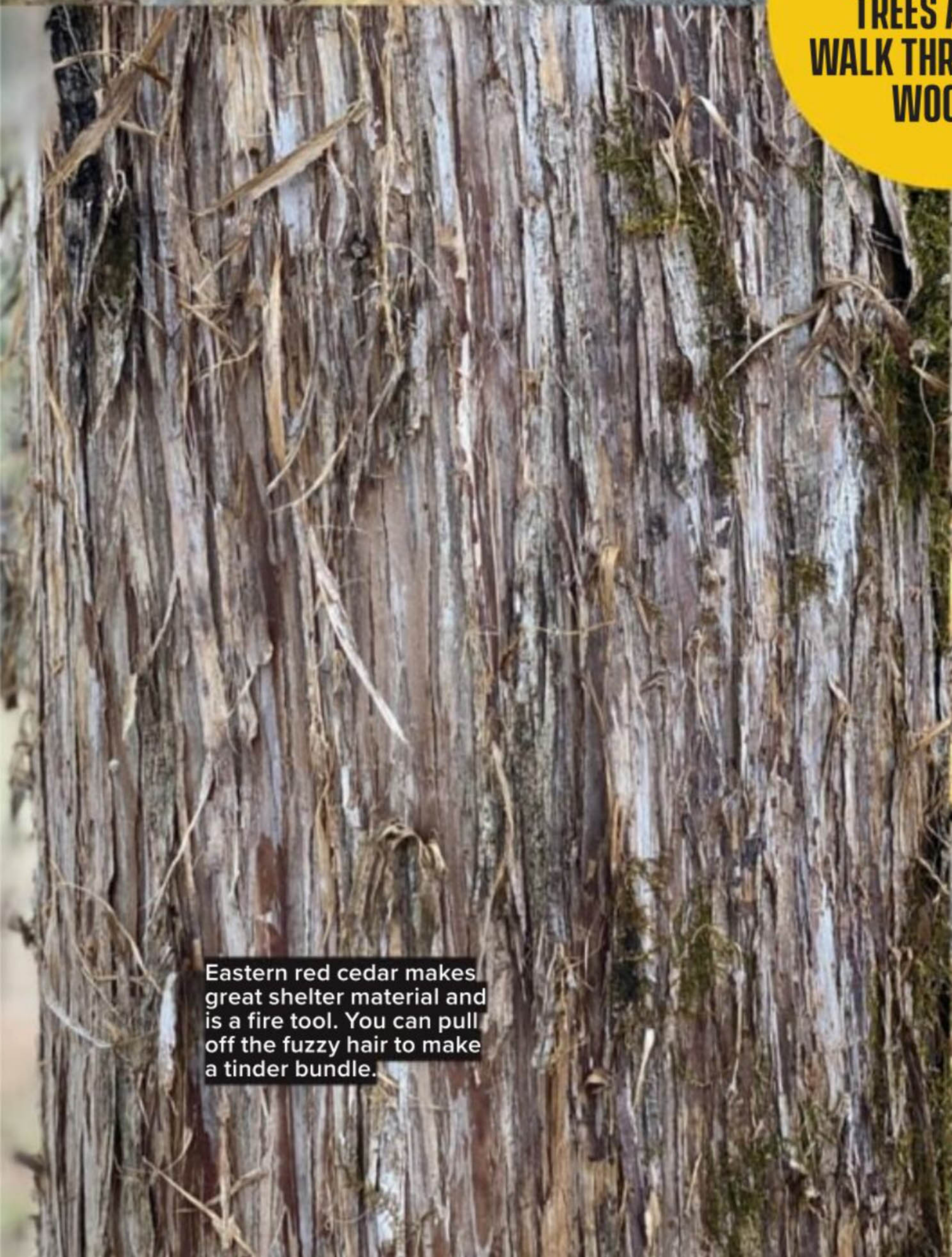


River birch is a cousin to white birch but still has great fire-making capabilities. Pull off the loose bark and use it as tinder.

GET IN THE HABIT OF IDENTIFYING TREES AS YOU WALK THROUGH THE WOODS!



Cones, like these from an Eastern hemlock, make great tinder.



Eastern red cedar makes great shelter material and is a fire tool. You can pull off the fuzzy hair to make a tinder bundle.

Arborist companies can be a source for wood. The author arranged to obtain these dogwood pieces after they were cut down by such an outfit.

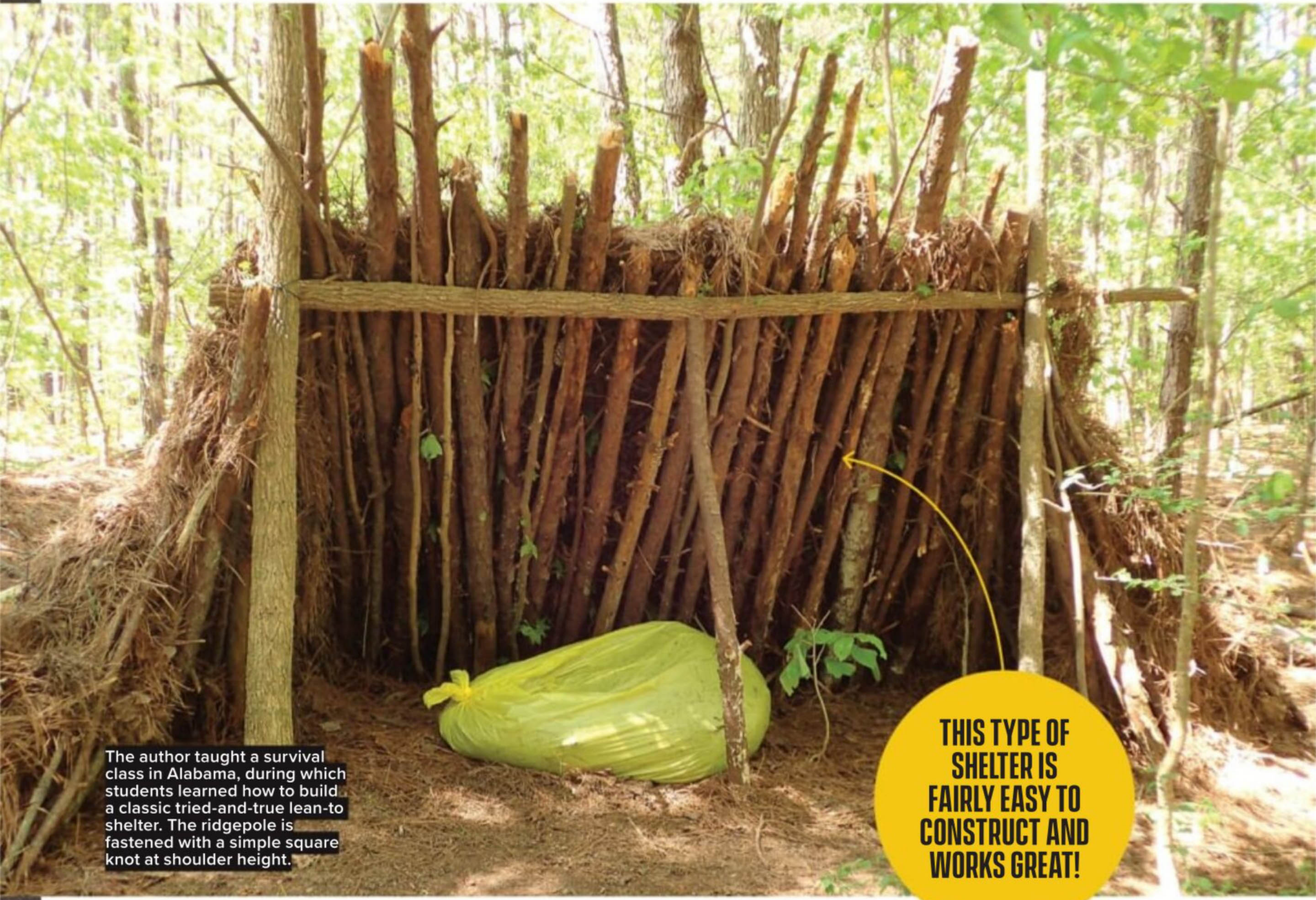
It might remind you of building a fort when you were a kid, but these can actually save your life.

IMPROVISED SHELTERS

Two time-tested options that work

BY REUBEN BOLIEU

HIKING AND CAMPING CAN BE AN EXHILARATING EXPERIENCE, BUT THERE ARE CHALLENGES. ONE OF THE MOST SIGNIFICANT RISKS IS THE UNPREDICTABILITY OF MOTHER NATURE. EVEN THE MOST EXPERIENCED HIKERS CAN FIND THEMSELVES STRANDED IN THE WILDERNESS, FACING EXTREME WEATHER CONDITIONS AND STRUGGLING TO SURVIVE.



The author taught a survival class in Alabama, during which students learned how to build a classic tried-and-true lean-to shelter. The ridgepole is fastened with a simple square knot at shoulder height.

THIS TYPE OF SHELTER IS FAIRLY EASY TO CONSTRUCT AND WORKS GREAT!

From sudden storms to unexpected drops in temperature, there are many ways in which the elements can turn an enjoyable hike into a fight for survival. We will explore various ways to shelter yourself from the elements if you unexpectedly find yourself in the field overnight.

TOOLS

You can easily construct two improvised shelters with some essential tools and materials. The ridgepoles, or the large center poles, do not have to be thick—just as wide as your wrist to your forearm would suffice. To cut the poles, you can use tools such as a folding saw or an ax-like chopping tool, including a hatchet, tomahawk or cleaver. It is important to note that greenwood is more robust and offers some flex, while deadwood can work if it's a hardwood, such as oak, maple or sweetgum. It's best to avoid using conifer tree wood.

EXPOSURE TO THE ELEMENTS CAN CAUSE MAJOR PROBLEMS, UP TO AND INCLUDING DEATH, SO BEING ABLE TO GET UNDER COVER IS IMPORTANT.

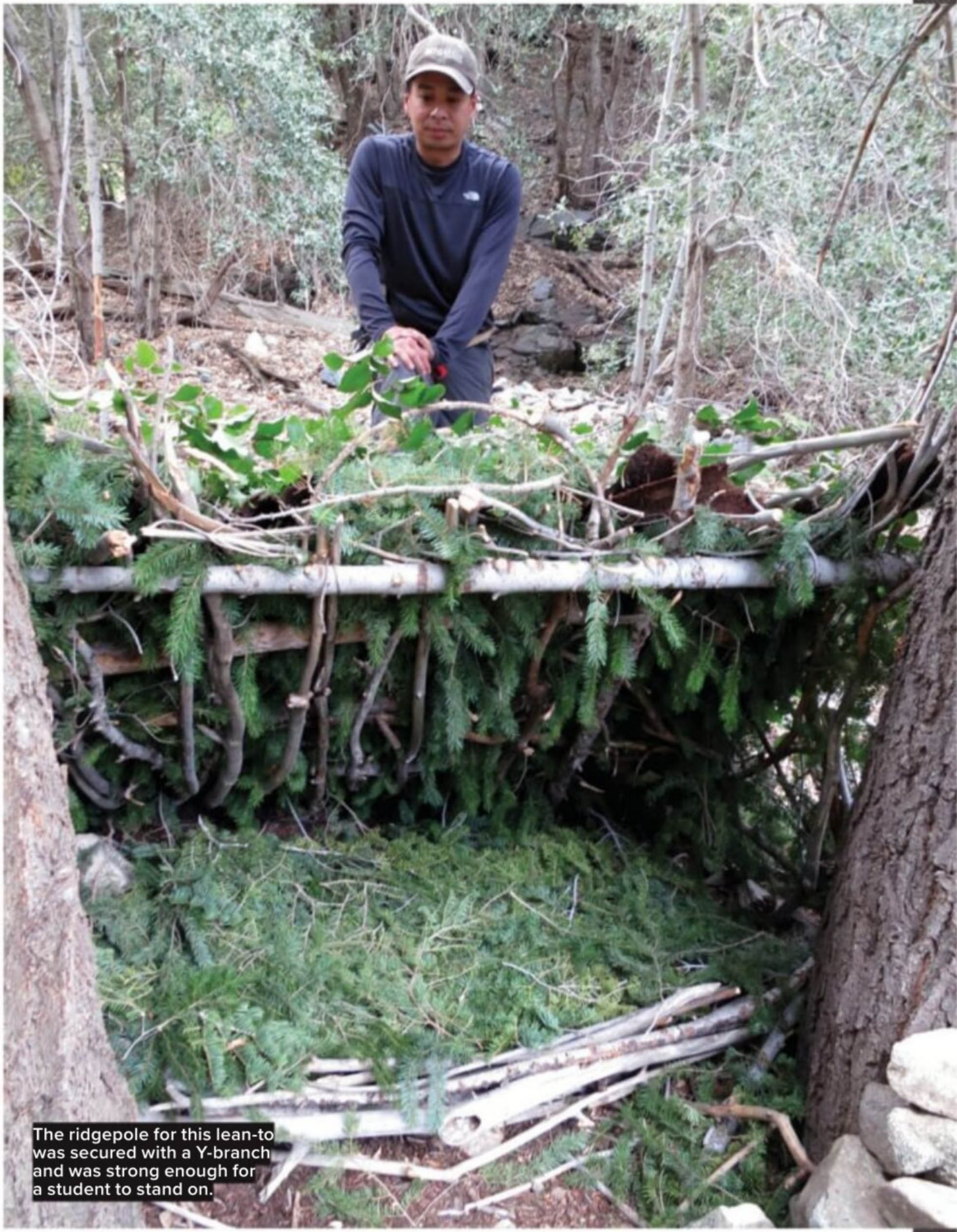
I believe cordage is a crucial survival tool. Typically, 550 paracord or 36 bank line will do. However, you don't need anything fancy when it comes to knots. Simple knots, such as granny or shoelace knots, are practical for fastening a ridgepole to a tree or lashing two sides together for a lean-to. If you can spare them, shoelaces can also be used in emergencies. With these essential tools, you can create sturdy shelters that provide protection from the elements when you're spending time in nature.

It's helpful to have a pair of sturdy work gloves when constructing a shelter. They'll protect you when you're breaking ridgepoles, supporting branches and poles. You can wedge a length of wood between two trees that are close together, then use some force to break it. It's not necessary to have clean-cut ends for a debris shelter. If there are large protruding stones or boulders nearby, swing a pole like a baseball bat to snap it to size. (This method is more effective for sectioning firewood.)

Suppose you don't have cordage such as shoelaces or a belt. In that case, you can use robust Y-branches to wedge and hold a ridgepole for the A-frame of a debris hut or either side of the lean-to ridgepole. For several years, I have utilized lean-to shelters in two separate semipermanent camps without any cord securing the ridgepole. I also used a tripod to support one side of the shelter.

DEBRIS HUT

Creating a debris shelter or hut can be lifesaving in wilderness survival situations. To construct such a shelter, you would need a 10- to 12-foot sturdy ridgepole that should be lashed about waist-level high at one end. This type of shelter mimics a squirrel nest, and you can use materials such as pine straw, leaves, boughs and whatever is available in the surrounding area. The shelter's structure should look like dinosaur ribs in a museum, with sticks leaning against the center ridgepole at a steep angle to shed water. The less the sticks protrude above the ridgepole, the better it will be at keeping water out. This shelter is meant to insulate without using an extra heat source like a fire.



The ridgepole for this lean-to was secured with a Y-branch and was strong enough for a student to stand on.

After laying the foundation, you will need to cover the shelter with thatching until it resembles a hut with thick walls. A large garbage bag or an empty backpack can help collect debris and add it to the shelter. In survival classes, I often joke about this step, saying, "It's called yardwork," and only the parents seem to get it. Although it's the most tedious part of building these shelters, it's a necessary step.

When building a shelter, it's important to insulate the inside with debris or a backpack filled with debris. Unfortunately, many people make a mistake during training by not using enough insulation on the ground. Debris is essential because it helps prevent heat loss through conduction and keeps you warm by retaining heat. It's important to remember that the forest floor can't be heated, so proper insulation is key to staying warm and safe while in a debris shelter or hut.

Here are a couple of tips: Kick debris into the shelter during rib construction before fatigue sets in and the thatching compromises visibility. Use a debris-filled backpack for a door or insulation.

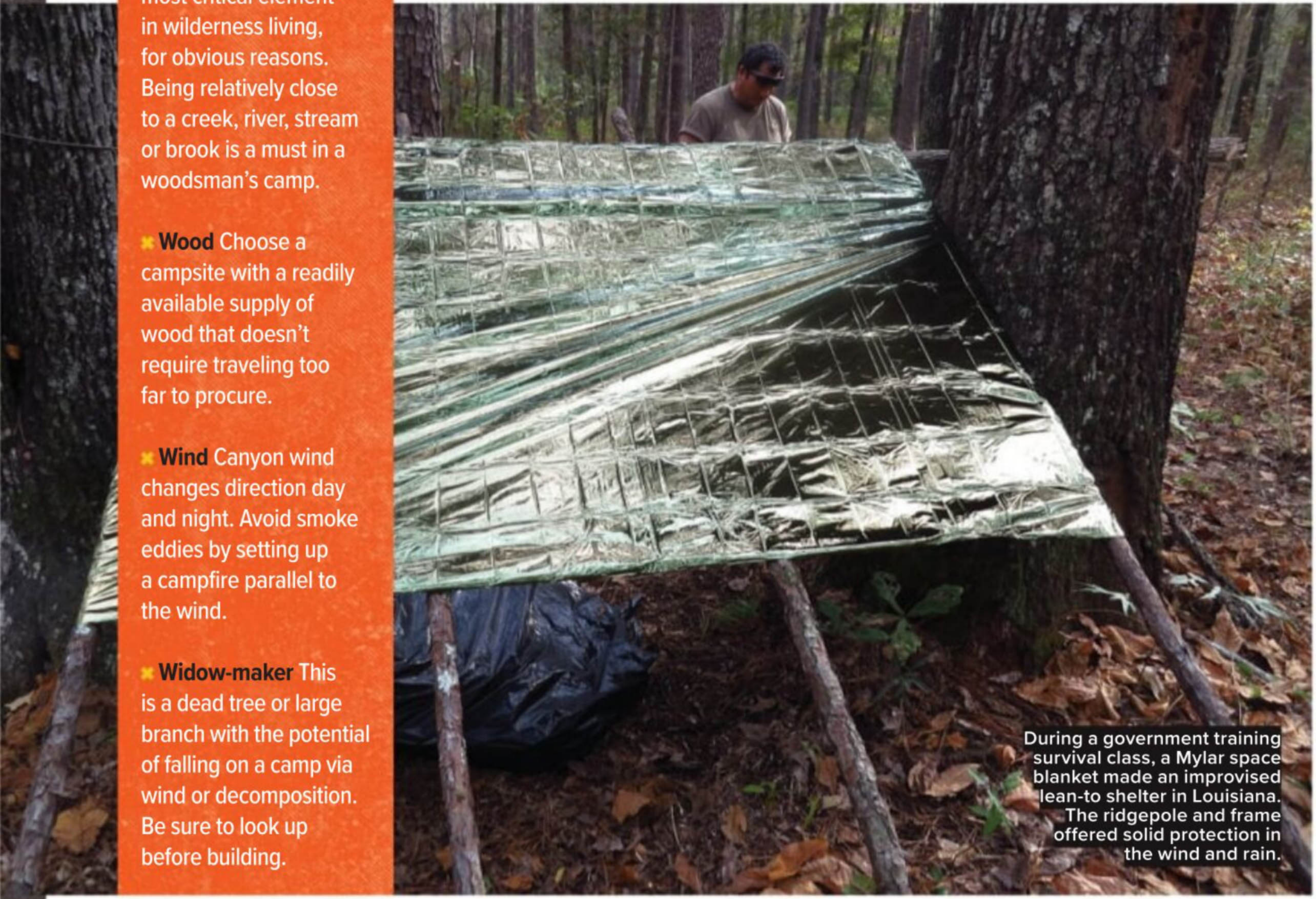
TRIED AND TRUE

A lean-to shelter is a simple type of shelter that can be easily constructed using natural materials found in the wilderness. It consists of a (horizontal) ridgepole and a set of support poles (trees). To build a lean-to shelter, find a suitable location with a sturdy tree or rock that can anchor the ridgepole. These shelters are individual and should be made to fit us, so attach the ridgepole at shoulder height or lower. Then, find several long, straight branches to use as support poles and lean them against the ridgepole at a 45-degree angle. Next, cover the support poles with a layer of broomstick- to wrist-thick poles. A layer of long, thin sticks should be added to help catch the debris and fill in those gaps—lastly, yardwork. Use leaves, grass or other natural materials to create

THE 4 W'S

Keep these in mind when you choose a site for your shelter.

- **Water** This is the most critical element in wilderness living, for obvious reasons. Being relatively close to a creek, river, stream or brook is a must in a woodsman's camp.
- **Wood** Choose a campsite with a readily available supply of wood that doesn't require traveling too far to procure.
- **Wind** Canyon wind changes direction day and night. Avoid smoke eddies by setting up a campfire parallel to the wind.
- **Widow-maker** This is a dead tree or large branch with the potential of falling on a camp via wind or decomposition. Be sure to look up before building.



During a government training survival class, a Mylar space blanket made an improvised lean-to shelter in Louisiana. The ridgepole and frame offered solid protection in the wind and rain.

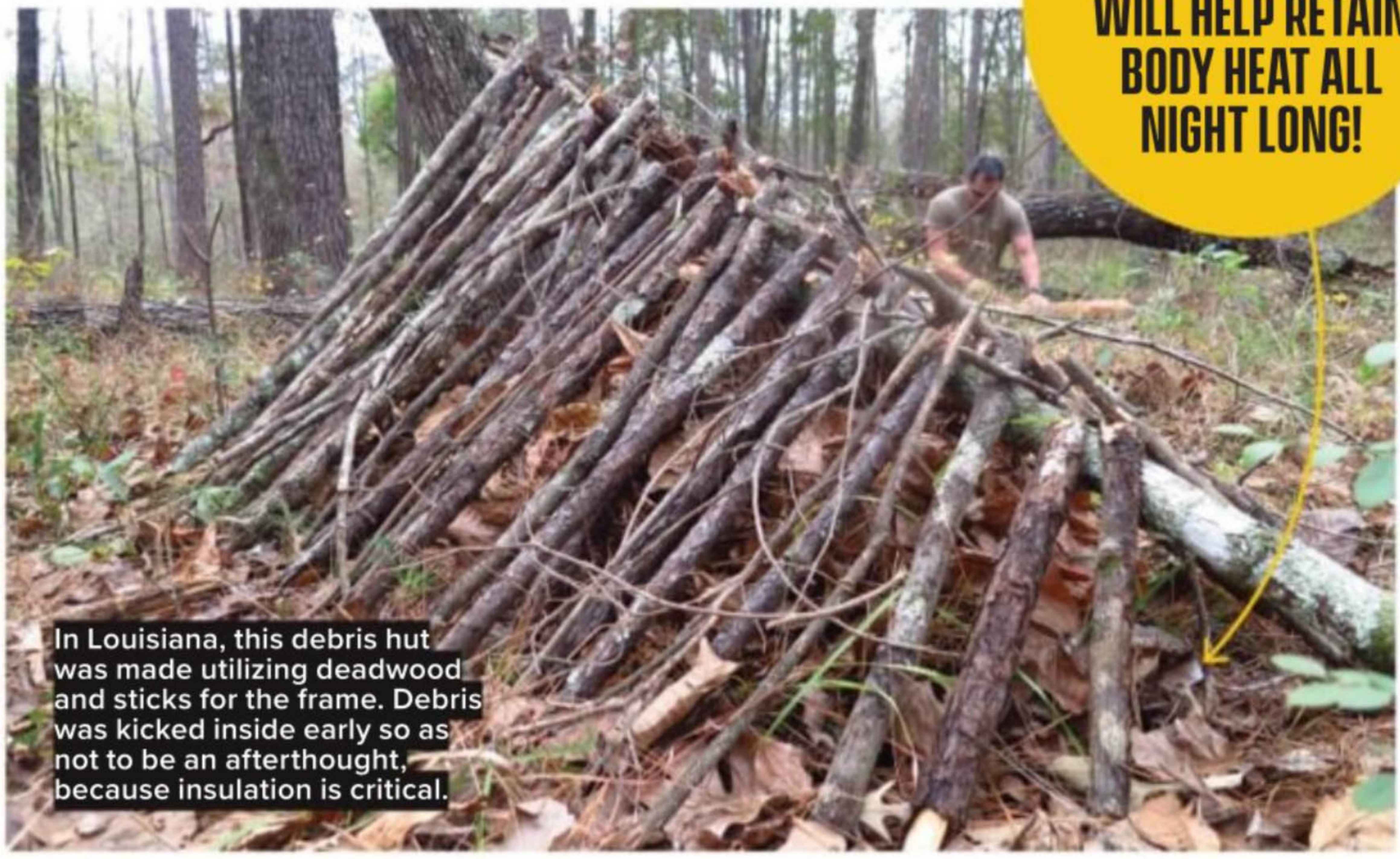
a protective barrier from the elements. This shelter is ideal for protecting yourself from wind, snow and rain. It can be constructed quickly and easily in emergencies.

This open shelter is designed to provide warmth, with a crackling fire positioned only a step away from the cozy bedding. In order to make the most of the morning sun, the lean-to shelter should be facing east or southeast. It's best to have the shelter closed on two to three sides, allowing enough room to sit comfortably but not enough to stand up.

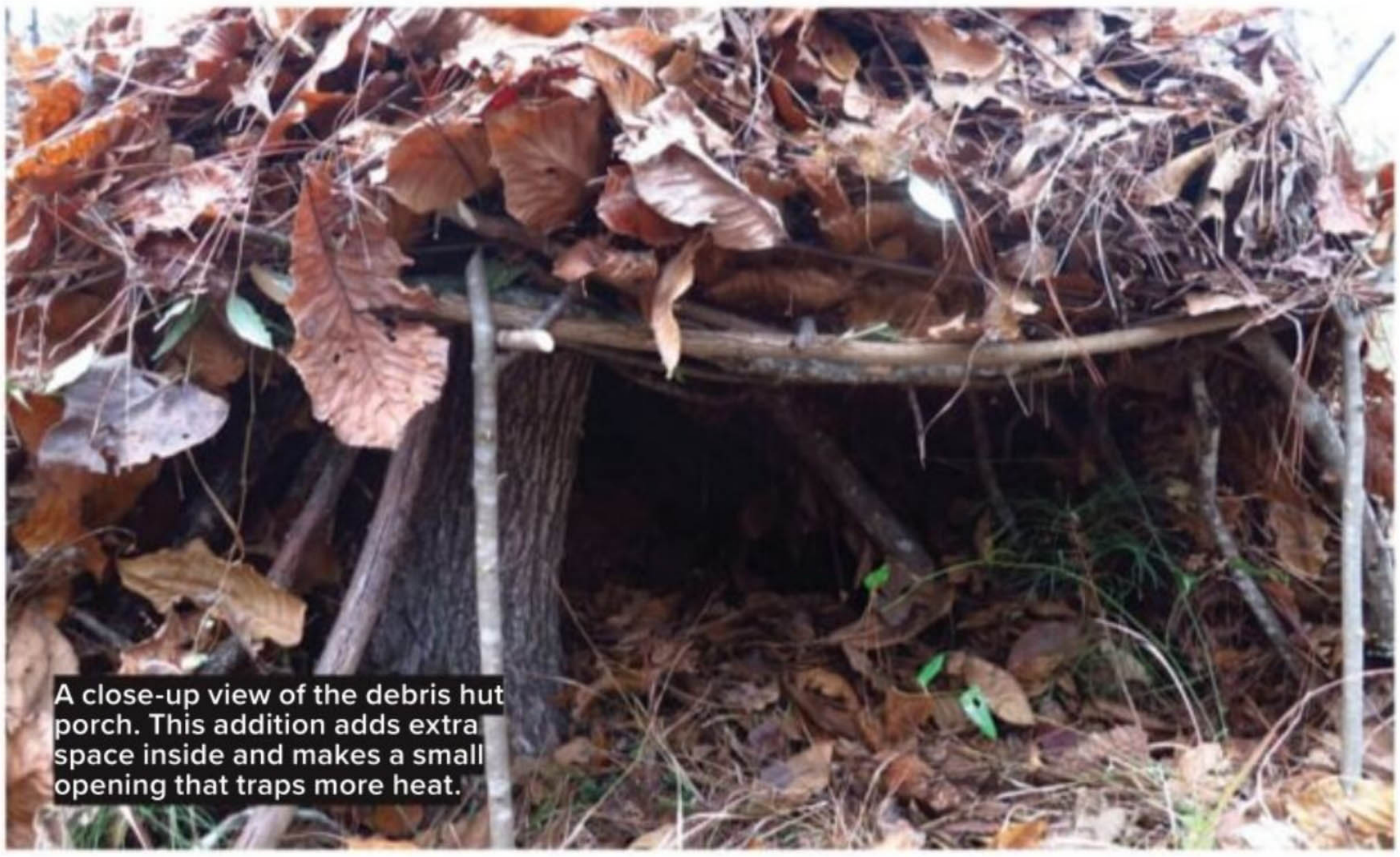
A few pointers: Use a garbage bag to make a debris mattress. It will make the perfect amount of insulation without displacing during the night. It can be maintained in the morning. Make a long fire for all-night warmth and procure plenty of logs around and beside the bed. Stash additional small kindling to brand up the fire if it gets down to coals.

Having a few simple tools, such as a folding saw, cordage and a garbage bag, can significantly assist with building a shelter. Make sure to master the basics of lean-to and debris shelters to prepare for any weather conditions. It is crucial to be well equipped to handle extreme weather situations when Mother Nature gets an attitude.

A DEBRIS HUT IS COZY AND WILL HELP RETAIN BODY HEAT ALL NIGHT LONG!


In Louisiana, this debris hut was made utilizing deadwood and sticks for the frame. Debris was kicked inside early so as not to be an afterthought, because insulation is critical.

A large trash bag serves two purposes: to help transfer materials to thatch the shelter and to make a mattress or blanket.


A close-up view of the debris hut porch. This addition adds extra space inside and makes a small opening that traps more heat.

CHAPTER 2

HOMESTEADING

SELF-RELIANCE CAN BE A LOT OF WORK, BUT THE REWARDS MAKE IT WORTH ALL OF THE EFFORT.

NATURAL REMEDY GARDEN

Treating ailments at home

BY ANGELINE HAWKES

With a little planning and some hard work, you could have an entire medicine cabinet growing in your backyard.

THE SYMPTOMS OF MANY AILMENTS CAN BE TREATED WITH HOMEGROWN MEDICINAL HERBS JUST AS EASILY AS THEY CAN BE TREATED WITH OVER-THE-COUNTER MEDICATIONS. THE DIFFERENCE IS FEWER CHEMICALS, LESS SUGAR OR ALCOHOL, FEWER ADDITIVES—AND LESS MONEY SPENT.

Two methods of using herbal treatments are as topical salves and ingested teas. Medicinal herbs can be grown from seeds or plants. There are many online sellers offering medicinal herb plants and seeds on eBay, Etsy and Amazon. Most medicinal herbs can be grown in containers as well as in a backyard garden.

TOPICAL REMEDIES FOR THE SKIN

If you suffer from dry skin, abrasions, scrapes and cuts, or spend time in the sun, you can treat them with herbs and plants that can be used fresh or dried. Aloe vera, a member of the Liliaceae family, has been used medicinally since 1500 B.C. to treat skin conditions. This perennial plant is similar to a cactus with fleshy, juicy leaves. Recommended for USDA planting zones 9-11, aloe vera will grow well indoors, too. The gel inside of the plant's leaves can be squeezed directly onto sunburn, ulcers, cuts, scrapes or dry skin. This plant has anti-bacterial, anti-inflammatory, antiseptic and antiviral properties.

- **Calendula** is another wonder for the skin. A perennial plant, it's recommended for planting zones 9-11. Calendula is known for anti-inflammatory properties and can be used to treat skin inflammations. Make a calendula and comfrey salve with ½ cup of each dried herb mixed with 2 cups of olive oil, strained and mixed with 1 cup of grated beeswax (see Basic Salve Instructions, right).

- **Comfrey** was known in ancient times as knit bone. This plant heals skin so quickly that it's not recommended for deeper wounds because the skin can heal before the internal cells, possibly trapping infection. Comfrey is a perennial plant growing well in zones 3-9.

- **Echinacea** is a flowering plant in the daisy (Asteraceae) family. It provides analgesic, antiviral, anti-inflammatory, anti-fungal, anti-bacterial and antioxidant properties. Grow this flower, known also as coneflower, in zones 3-9. Echinacea can be used topically and internally.

Calendula is known for its anti-inflammatory properties and is used for treating inflamed skin.

MANY OF THESE PLANTS CAN BE HARVESTED, PROCESSED AND THEN PRESERVED FOR FUTURE USE.

You can save the calendula petals for later use.

BASIC SALVE INSTRUCTIONS

A salve is infused oil mixed with melted wax that becomes solid at room temperature. Beeswax can be purchased in pellets or bricks (requiring grating). Oils such as almond, coconut or olive can be used. To make infused oil, in a canning jar, add 1 cup of dried herbs and 2 cups of oil. Close tightly and place in a sunny window for about three to four weeks, shaking daily. At the end of the steeping time, strain the liquid through a sieve or cheesecloth, pouring the liquid into the top of a double boiler. Add 1 cup of grated beeswax to the infused oil and stir over low heat until the wax melts. Pour the mixture into containers with lids. If the salve is too hard, remelt and add a little oil to it; likewise, if it's too soft, add 1 tablespoon of wax to the remelted mixture. Store the salve in the refrigerator for up to a year. If stored at room temperature, use the salve within six to eight months.

ONCE YOU KNOW THE BASICS, YOU'LL BE ABLE TO TREAT A VARIETY OF AILMENTS!

COLD AND RESPIRATORY AILMENTS

The symptoms of respiratory ailments, such as sore throats, can be treated naturally. Syrups can be prepared and stored in the refrigerator, standing at the ready for when a family member presents with an ailment. There are many herbs used to treat cold symptoms.

- **The berries and flowers of the elderberry (Sambucus, in the Adoxaceae family)** have been used for centuries to treat illnesses, inflammation and as a pain reliever. This plant is classified as a small tree or shrub and grows best in zones 3-8. The purple berries are only safe to consume cooked: They're toxic if eaten raw. Elderberries help boost the body's immune system.
- **Horehound** is a velvety plant that grows in zones 3-9 in sandy soil. It is an expectorant, so it loosens mucus. It soothes throat tissues and is an excellent ingredient in cough drops.

Echinacea can be used topically and internally.

Comfrey was known in ancient times as knit bone.

- **Peppermint** is often used in herbal teas as a flavoring to disguise the bitter taste of other herbs, but it's a powerhouse of herbal goodness. Peppermint is anti-bacterial and a painkiller. This plant is almost impossible to eradicate once planted, so make sure you want it where you put it. It grows well in zones 3-8, but will also thrive in a sunny window indoors. The helpful ingredient in peppermint is menthol, which is a decongestant. It's good for thinning mucus and as an expectorant.
- **Yarrow** is a member of the daisy (Asteraceae) family and grows well in zones 3-9. The two main medicinal functions of yarrow are as a diuretic and to induce sweating, both of which help rid the body of toxins. It's also a pain reliever.

BASIC TEA AND DOSAGE INSTRUCTIONS

To make medicinal tea, stir 2 teaspoons of dried herbs (or 2 tablespoons of fresh herbs) into 6 to 8 ounces of boiling water. Cover the mug and let the herbs steep for 10 to 15 minutes. Sweeten with honey, sugar or cinnamon candies. Paper tea bags that can be ironed shut with a household iron are available online, as are fabric tea bags and metal tea balls. The adult dosage is 1 cup of tea every four hours.

> THESE REMEDIES AREN'T DIFFICULT TO MAKE AT HOME, BUT YOU DO NEED TO PAY CLOSE ATTENTION TO THE INGREDIENT LIST AND DOSAGES.

PAIN RELIEF

Pain can be treated topically or internally. If you're suffering from aches after a rough workout, topical salves can be soothing. If you're tired of over-the-counter pain medications such as acetaminophen (Tylenol), a comforting tea can provide a measure of relief.

White willow bark is an excellent pain reliever, but requires the bark of a tree. For most people this medicinal herb is best purchased, but should you want to grow a willow tree, it will grow best in zones 3-8 in a moist, loamy soil.

- **Devil's Claw (Harpagophytum procumbens)** is a plant in the sesame family and is native to Africa. Used medicinally, the dried root is good for fighting pain and inflammation. Devil's claw grows in zones 9-11 in dry, desert-like environments. According to the Icahn School of Medicine at Mount Sinai in New York City, studies have proven that taking devil's claw reduces pain in people suffering from osteoarthritis. It's also effective at treating headaches and back pain.

- **Ginger** is best known as a culinary spice that can add a little kick, but this medicinal plant is also a pain reliever and an immune system booster, and it can reduce nausea. A tropical plant, it grows in zones 9-11 and can take a year or more to reach maturity.

Elderberries are great for the immune system, but they must be cooked before consuming.

DIGESTIVE AND URINARY

Constipation is when a person has less than three weekly bowel movements. A few herbs that might help and are easily grown in a garden or container are dandelion, peppermint and rhubarb. Dandelion is often thought of as a nuisance weed, but in fact, every part of the dandelion is edible and beneficial. Dandelions have diuretic and laxative properties and grow best in zones 3-10. Peppermint relieves bloating and cramping and is used to treat digestive issues. It relaxes intestinal muscles, easing constipation. Rhubarb is good for more than tasty pies! It grows well in zones 3-8 from seedlings, with a harvest possible in its second year. Rhubarb is a laxative. Mix it with raspberries, blackberries or strawberries (also laxatives) for a tasty medicinal tea or treat.

If loose stools are a repeat offender in your life, try ginger. It has been used for thousands of years by Asian doctors to treat diarrhea. It has natural anti-bacterial and anti-inflammatory properties to soothe irritated bowels. An 8-ounce cup of boiling water can be mixed with 2 tablespoons of grated ginger for relief. Most people know that chamomile tea is calming, but it's also an anti-inflammatory, which calms cramping. This flowering plant (a member of the Asteraceae family) grows in zones 3-9.

ELDERBERRY COLD OR FLU SYRUP RECIPE

Try this recipe the next time you're suffering from a bad cold or the flu.

Ingredients

- 2/3 cup dried elderberries
- 3 ½ cups water
- 2 tablespoons ground ginger
- 2 tablespoons ground cinnamon (muscle relaxer, anti-inflammatory)
- 2 tablespoons Echinacea
- 1 teaspoon ground cloves (pain reliever)
- 2 teaspoons dried yarrow flower/leaves
- 1 cup honey (anti-bacterial)

Method

Add everything except the honey to a saucepan and bring to a boil, stirring frequently. Reduce the heat to low and simmer for 3 to 4 hours until reduced in volume by about half. Remove the pan from the burner and allow the syrup to cool. Strain to remove the solids. Return the liquid to a clean pan and add the honey. Mix well and pour into an airtight jar. Keep the syrup refrigerated for up to a year.

Adult Dosage

For a cold, take 1 tablespoon daily. For flu, take 1 tablespoon every 3 hours until symptoms diminish. (Do not take if you have allergies to the daisy/Asteraceae family.)

Urinary tract infections can quickly go from mild to serious and should always be treated by a doctor, but several medicinal herbs will help reduce your suffering. Uva ursi, or bearberry, has been used by Native Americans for centuries to treat urinary infections. This antibacterial herb grows well in zones 2-7 and doesn't like humid climates. Dandelion root and flower help the body urinate and rid itself of the infection. The soothing, pain-relieving properties of the marsh mallow plant (Althaea officinalis) coats the urinary tract with a substance called mucilage. This plant has soft, fuzzy leaves, grows tall and spindly, and does well in moist soil, in full sun, within USDA zones 3-9. Harvest the roots every other year to dry for medicinal teas.

PROCESSING DRIED HERBS

Fresh or dried herbs may be used in salves or teas. In recipes, 1 teaspoon dried herbs equals 1 tablespoon fresh herbs. Herbs can be dried by air-drying (one to two weeks) or in a dehydrator (one to four hours). Air-dried herbs can be hung by tying their stems together, by spreading them on a baking sheet in a cool, dry area, or by placing them in a brown paper bag with holes poked in it. Shake the bag daily to discourage molding. Fresh herbs can be frozen. Place the herbs on a baking sheet and put them in the freezer until frozen. Transfer the frozen herbs to a freezer bag and store in the freezer. Prepared teas can also be frozen for longer storage as well as faster use. Carefully pour the cooled tea into ice cube trays, freeze and transfer the tea cubes to a freezer bag. Two or three cubes will fill a coffee mug. Defrost and enjoy.

SHELF LIFE

Store dried herbs in airtight containers, such as canning jars. Make sure the herbs are entirely dried before storing or mold will ruin them. Store the jars in a cool, dark area for up to two years. Herbs don't go bad unless exposed to moisture, but they do lose potency. Medicinal infused oils or salves can oxidize and go rancid if not stored in the refrigerator or used within six to eight months.

Carrots are an excellent option as they keep very well and are packed with nutrients.

HOMEGROWN CARROTS AREN'T ALWAYS AS PRETTY AS ONES FROM THE STORE!

VEGETABLES FOR THE LONG TERM

Getting you through lean times

BY DANA BENNER

TO LIVE THIS LIFESTYLE, THE ONE THING YOU HAVE TO CONSTANTLY DO IS TO THINK IN THE LONG TERM. AS THE CLIMATE IS CONSTANTLY CHANGING AND THE SEASONS FLY BY, I'M ALWAYS THINKING ABOUT MY NEXT MOVE. IT'S LIKE PLAYING A HUGE GAME OF CHESS.

As hot and humid as the summers are around here, they are short-lived. Before long, the temperatures will drop, the growing season will come to an end and the snows of winter will blanket the ground. It is during these warmer times that I concentrate on those things that will get me through the lean times of winter that are just around the corner. I work to fill my freezers, stock my shelves, and try to anticipate every little thing that could happen now and during the next growing season. Like with everything else I do, I have a plan, and the vegetables I plant in my garden are a good reflection of my long-term strategy.

WHAT TO PLANT

Deciding what to plant in one's garden is an individual choice. A great deal of what you choose will depend on the area in which you live. Some places have longer growing seasons than others, as well as different soil conditions. With that said, no matter where you live, the truth is that not all plants will produce fruit that is suitable for long-term storage. While all vegetables can be canned or frozen, there are some that are better for storage without the extra effort. They are the ones that the old-timers planted, long before there was such a thing as refrigeration. Some of the plants mentioned here will be ones that you expect, while others may catch you by surprise.

ROOT CROPS

At the top of my list for long-term storage are root crops like potatoes, carrots, parsnips, turnips, onions and others. I don't grow all of these, as for some reason turnip and onions don't do well for me. Instead, I concentrate on potatoes, carrots and parsnips, as they are relatively easy to grow and they are what my family will readily eat.

The thing about all root crops is that they need plenty of room and proper soil to really produce. A light, sandy loam is the perfect soil as it retains moisture, drains well and has room for the roots to fully develop. Remove as many rocks from the soil as you can, because they will retard proper root formation.

One common problem I often see is that people don't give these plants enough space to develop. When planting those little seeds, try to picture what the mature root will look like and then plant accordingly. It is not as easy as one may think—and to this day, each gardening season I still need to thin out some of the little plants to allow the others to grow.

It's important to teach the next generation how to grow and preserve food.

SQUASH

Many people associate squash with the soft-skinned varieties such as yellow squash and zucchini, but neither of these is good for long-term storage unless you can or freeze them. For long-term storage, I turn to the hard-shelled varieties, better known as winter squash. Some examples of these are butternut squash, acorn squash and pumpkin. When it comes to pumpkins, I prefer to grown the smaller sugar or pie pumpkins because they take up less room in the garden and have a great taste and texture.

These squashes tend to take longer to grow, so patience is the key. Believe me, they are well worth the wait. Squash, like root crops, need room to spread out. Winter squashes tend to send out tendrils, and it is from these tendrils that flowers, and later fruit, will grow.

OTHER CROPS

Here are some other crops that many people may not think about for long-term storage, but they should.

- **Cabbage** Unlike lettuce, spinach and chard, cabbage will form into very tight balls. The outer leaves of that ball act very much like the outer shell of winter squash. In other words, they protect the insides from the elements and insects.

Cabbage will store well under the proper conditions.

THE OUTER LEAVES ACT MUCH LIKE A SHELL TO PROTECT THE REST OF THE PLANT!

- **Beans** Beans are a staple in my home, just as they were with my Native American ancestors. When I plant beans, it is with two purposes in mind. First, I plant enough to provide my family with produce throughout the summer. Second, I plant enough to allow some to mature, thus going to seed. Some of the seed I will use to replant the next year and some will be stored away to be used in my world-famous baked beans and chili.

- **Peas** Like beans, peas can be allowed to mature and then stored away for later use, either for future plantings or for cooking.

STORAGE

How you store these vegetables will dictate how long they will last. The trick is to keep your vegetables in a cool, dry and dark place with good ventilation. In olden times, root cellars were very popular. Dug underground or into the sides of hills, root cellars were a great storage place as they stayed cool in the summer, but didn't freeze in the winter.

Today, most of us don't have root cellars, but many of us have basements under our homes. Basements can be adapted to serve the same function as the old-time root cellar. You just may need to make a few modifications to get it done.

Many of the old root cellars had rough wooden crates to hold the root crops. I use the same basic technique, but with modern-day devices. Instead of wooden crates, I store my potatoes, carrots and the like in large plastic tubs with sealable lids. Into this tub I put a layer of dry medium, like play sand (available at any hardware store) or dry wood chips, then a layer of vegetables, and then another layer of the dry medium. The combination of the dry medium and the sealable lid helps to keep the moisture from the air out. It's not foolproof, but it does seem to work most of the time.

> **BEING ABLE TO STORE VEGETABLES FOR LONG PERIODS OF TIME MEANS YOU'LL HAVE FOOD TO EAT THROUGH THE WINTER MONTHS.**

When it comes to the squashes, including pumpkins, I place them on metal shelves in my basement. This keeps them up off the floor and allows air to circulate around them. I also keep a small fan going just to keep the air moving.

With grocery stores around every corner, many people have lost touch with the lessons from times past. Not so long ago, if you didn't prepare, the winter months could be long and hungry ones. In this day and age, we all need to do things to keep our families fed. Growing crops with the long term in mind is just one of the ways I do this.

When the next planting season rolls around you need to think for the long term. Set aside space in your garden for an extra row of beans, peas, winter squash or root crops. While none will last forever, with proper storage they will last long enough to help see you through the leaner times of the year.

TOP FIVE LONG-TERM CROPS

Everyone has their favorites and your list may be different than mine. You'll notice that some are native crops, while others are introduced. You'll also notice that beans are missing. I have found that it is much more economical to purchase dried beans and save space for other crops.

- **Potatoes** Potatoes are probably the most important root crop. From Maine to Washington and everywhere in between, they can be enjoyed at every meal. There are many varieties out there. Pick the best for you.

- **Carrots** Carrots are not native to North America; they were bought here centuries ago and are a staple in many gardens. When I plant carrots, I stick to heirloom varieties.

- **Parsnips** Parsnips are another crop not native to North America. They're really tasty and keep well.

- **Pie Pumpkin** All pumpkins are native to North America. Pie and sugar pumpkins keep well and take up little room.

- **Butternut squash** Butternut squash are the most popular of all the winter squashes and they are an absolute must in your garden.

Dana Benner lives in New Hampshire. He has been writing about all aspects of the outdoors and sustainability for 35 years, with his work appearing in numerous publications.

Consider talking to gardening neighbors about trading some of what you growfor some of theirs.

SIMPLE AND EFFECTIVE

Don’t let the harvest go to waste

BY ANGELINE HAWKES

This works particularly well for jams and jellies, among other things.

IT REQUIRES A BARE MINIMUM OF SUPPLIES AND CAN KEEP FOOD VIABLE FOR A LONG TIME!

IN 1795, NAPOLEON OFFERED MONEY TO ANYONE WHO COULD PRESERVE FOOD TO FEED HIS TROOPS. FIFTEEN YEARS LATER, NICOLAS APPERT CLAIMED THE PRIZE WITH A WAY OF BOILING AND SEALING FOOD WITHIN GLASS JARS. HE S CONSIDERED THE FATHER OF WATER BATH CANNING.

Although canning destroys a little over one-third of vitamin A, vitamin C, riboflavin and thiamin found in fresh foods, other vitamins show only slight reductions. Properly home canned foods are nutritious and have a stable, long shelf life.

WHAT IS WATER BATH CANNING?

Water bath canning is a process of preserving acidic foods using boiling water to destroy harmful bacteria and a vacuum to remove the air in a jar to prevent bacteria from forming. Foods are heated within a glass jar covered by a flat metal lid and a screw-on metal ring. The lid has a latex-based film around the edge that softens in boiling water and adheres to the jar's glass rim, allowing air to flow from the jar during processing, and forms an airtight seal upon cooling.

Foods suitable for the water bath method are acidic items having a pH factor of 4.6 or lower (the lower the pH, the higher the acid content). Suitable preparations and foods include some condiments, chutneys, fruits, fruit butters, fruit juices, jams, jellies, marmalades, pickles, pie fillings, relishes, salsas, sauces, sauerkraut, tomatoes and vinegars. Figs and tomatoes sometimes have pH values higher than 4.6, so these fruits must have the pH levels lowered by adding acids such as citric acid or lemon juice.

BOTULISM

Botulism is caused by the toxin Clostridium botulinum. This toxin cannot be seen, tasted or smelled. Its spores grow in low-oxygen or oxygen-free environments. Botulinum bacteria are destroyed in food with a high acid content, along with it reaching a temperature of 212 F during canning. This is why it's important to use the appropriate method for the foods being canned. Foods with a low acid content are not able to stop botulinum from growing. As with any canned product—whether canned at home or commercially—if the can is swollen; spurts foam, gas or liquid when it's punctured or opened; is visibly discolored; has mold or growths; or smells off or bad—it should be discarded without tasting it.

TWO METHODS

There are two methods of water bath canning: cold or raw packing and hot packing. In cold or raw packing,

It can be a messy affair and you'll want some space to work, but it can be a fun way to spend an afternoon.

Pay close attention to the processing time in the recipe you use.

fresh, unheated food is placed in a hot jar. Hot packing involves boiling and simmering food for about five minutes before placing it in hot jars. In both cold-packed and hot-packed foods, boiling liquid in the form of water, sugar syrup or fruit juice is poured over the food in the jars. The boiling liquid reduces the food volume, enabling more food to fit in the jar; removes air from the foods; and increases the odds of creating a successful vacuum in the sealed jar.

ADDING ACID

Most recipes instruct the canner on how much acid to add to which food. The acid used can be are ascorbic acid (vitamin C), citric acid, lemon juice or vinegar. Acids are also used to pretreat fruits and vegetables to reduce the browning caused by contact with oxygen in the air. For pretreating, in a very large bowl, add 1 gallon of cold water and 1 teaspoon of acid. Immerse the cut food in the mixture before processing. To add acid to the jars—unless the recipe says otherwise—add 2 tablespoons lemon juice (bottled or fresh) to each quart jar, or 1 tablespoon to each pint jar, before placing the food into the jar.

TYPES OF JARS

Canning jars are often referred to by their brand names, with Ball and Mason being the predominant brands. In many European countries, canning jars are called bottles. Jars are either regular/standard or wide-mouth; regular jars have a 2 ⅜-inch diameter opening, while wide-mouth jars have an opening of about 3 inches in diameter (and are easier to fill). Both types come in ½ pint, pint, 1 ½ pint, quart and ½ gallon sizes. Jars and the screw-on metal rings may be reused, but lids should be discarded after one processing. Sometimes hard water will leave a white film on glass jars. This doesn't hurt the food, but if one finds it unsightly the film may be dissolved by soaking the jar in 1 gallon of water mixed with 1 cup of white vinegar.

A NOTE ABOUT ALTITUDES

Most home canning recipes will provide time adjustments for boiling and processing foods based on altitude. For altitudes over 1,000 feet, it's necessary to add time to processing times because at higher altitudes, water boils at lower temperatures, and higher temperatures are necessary to kill bacteria.

SUGAR SYRUPS AND SUBSTITUTIONS

Most recipes call for the addition of boiling liquid. Boiling water, boiling fruit juice or sugar syrup are the options. About ½ cup of liquid is needed per quart jar. For light syrup, mix 1 quart of water with 1 cup of sugar. For medium syrup, mix 1 quart of water with 3 cups of sugar. For heavy syrup, mix 1 quart of water with 4 to 5 cups sugar. If you're on a sugar-restricted diet, replace the juice or syrup with unsweetened fruit juice such as apple or white grape juice. The brand Splenda is the only artificial sweetener that can be swapped for granulated sugar in sugar syrup.

YOU CAN FIND MANY RECIPES FREE ONLINE OR IN BOOKS AT YOUR LOCAL LIBRARY!

In many families, canning the fall harvest is a long-standing tradition.

THE PROCESS

Start with gathering your supplies:

- Water bath canner or a kettle (at least 16 quarts) with lid. If you're using an electric stove, the canner should have a flat bottom for even heat distribution and be no more than 4 inches wider than the heating element)
- Canning rack or folded dish towel that covers the entire bottom of the pot
- Jar lifter
- Magnetic lid lifter
- Canning funnel
- Jars
- Rings
- Lids
- Tea kettle
- Dish towels
- Timer
- Pots, cutting boards, knives, spoons, ladles and other utensils

1 Inspect the jars. Look for cracks and chips. Wet your finger and the rim of the jar, then lightly run your finger around the jar's rim seeking any chips, dents or imperfections. Use imperfect jars for dry goods storage, but don't use them for canning because they won't seal.

2 Sterilize jars in the canner or another large pot. Place the canning rack or a folded towel on the bottom of the pot. Jars that come into contact with the canner/pot's bottom may break. Fill the pot with water and fully immerse jars. Bring to a boil, then allow the jars to simmer while the food is being prepared.

3 Prepare the food by peeling, then cutting, slicing, mashing, halving, quartering, dicing or any other preparation needed, then immerse the cut food in the lemon water to reduce browning. Follow any specific instructions in the recipe you're using.

4 Prepare the boiling liquid. If you're hot-packing foods, follow the recipe and, in a separate pot, boil and then simmer the food for the required time.

5 Boil water in a saucepan. Turn off the saucepan when the water boils and place the canning lids into the hot water to simmer so as to soften the seal. Simmering the lids is another "hot button" for canners. Some swear by it for a successful seal (this article's author included), but many canning websites now say simmering is unnecessary as the seals are now latex-based, rather than rubber.

6.Use a jar lifter to remove the sterilized jars from the canner and put them on a towel.

7 Use the canning funnel to assist with putting food into jars.

8 Add the boiling liquid (water, juice or syrup), leaving ½-inch head space unless recipe calls for different. Head space is the empty space above the food/liquid. This space is necessary to allow food to expand when heated, and to form the vacuum as the jar cools.

9 Insert a plastic knife around the outside of the food to drive out air pockets and bubbles.

10 Using a clean, wet towel, wipe the jar rims and threads. Use a magnetic lid lifter to remove a lid from the simmering water and place it, gasket-side down, onto the jar rim.

11 Screw on a metal ring only fingertip-tight—don't crank it! It shouldn't be on super tight. A ring is only used to hold the lid in place before it vacuum-seals onto the jar, then it's removed. If the ring is too tight, not enough air will be released to seal the jar. Usually just about two twists will do the job.

12 Lower the filled jars onto the rack or towel inside the canner. The water in the canner should cover the jars by one or more inches. Be prepared to remove water if the displacement caused by the full jars causes the canner to overflow.

13 Put the lid on the canner and bring the water to a rolling boil. This usually takes about 20 minutes. When the boil cannot be fanned down, start the timer for the recommended processing time per the recipe. The canner will sputter. It's a wet, messy affair. Use lots of towels to absorb the water. Fill the tea kettle with water and boil it. This way, you'll have a kettle of boiling water on hand in case the water in the canner boils down. Top off the canner as needed.

14 Place clean towels in an out-of-the-way area on the cabinet or table. When the timer sounds, turn off the burner; after 5 minutes, use the jar lifter to lift out a jar, holding a towel in your hand under the jar in case the lifter slips. Place the jars about 1 or 2 inches apart on the clean towels. Don't touch the tops. Don't adjust or tighten the metal rings. The jars might boil inside for up to an hour or so. You should start hearing ping sounds anywhere from immediately to a couple of hours later.

15 Allow the jars to completely cool for about 24 hours. Don't move, invert, tilt or otherwise touch the jars until this time. Doing so might result in the jar not sealing properly.

16 Inspect the lids. The lids shouldn't pop up or down when gently pressed in the center. If any jars pop when you depress the center, it didn't seal. The contents must be reheated and reprocessed in a clean jar with a new lid—or stored in the freezer or the refrigerator (use within one week if refrigerated).

17 Remove the metal rings. Clean each jar by running room temperature water over it, then drying. Wash the rings separately.

Store canned goods in a dark, dry, cool place. Use a permanent marker to date each jar on the lid. Home-canned food is recommended to be used within one year.

WATER BATH VS. PRESSURE CANNING

Pressure canners reach higher temperatures than water bath canners. Low-acid foods must be processed in pressure canners to destroy bacteria. Pressure canners are more expensive as they are a specialized piece of equipment, but water bath canning can be done in any pot that allows room for the jar plus at least 1 inch of water.

What should be pressure-canned? Baked beans, broths, chili, dry beans, all meats, pasta sauce, pumpkin slices, soups, stews, stocks, tomato products with other low-acid ingredients and vegetables. Some vegetables are able to be pressure canned, but typically aren't because they get mushy. These include artichokes, broccoli, Brussels sprouts, cabbage, eggplant, lettuces, olives and sometimes squash (although squash cut into chunks intended for casserole use can be pressure-canned).

Foods deemed unsafe for any method of canning include butter, coconut milk, cornstarch, cream, dairy products, eggs, flour, milk, pasta and rice.

Angeline Hawkes writes for *Backwoods Survival Guide*, *Backwoods Home Magazine*, *Prepper Survival Guide*, *Self-Reliance* magazine and others. Visit her YouTube channel, Canterbury Trails Farm: *youtube.com/c/CanterburyTrailsFarm*

BUYING IN BULK MAKES SENSE—IF YOU'RE SURE YOU'LL USE IT ALL BEFORE IT GOES BAD!

Weight loss advice to the contrary, we need some measure of these in our diets.

THE SKINNY ON FATS

Eating, using and storing these essentials

BY ANGELINE HAWKES

IT'S NOT KNOWN WHEN MAN BEGAN COOKING MEAT, BUT ARCHAEOLOGISTS HAVE DISCOVERED THE REMNANTS OF A 780,000-YEAR-OLD MEAL OF COOKED FISH AT THE ACHEULEAN SITE IN GESHER BENOT YA AQOV IN THE JORDAN VALLEY. ONE HAS TO ASSUME THAT WHEN COOKING MEATS, EARLY MAN DISCOVERED FAT DRIPPINGS.

He found the melted fat to be tasty, and figured out other uses for it. Fats allow nonfat foods to be cooked on a hot surface, such as stone, without burning. It also allows for faster cooking, with the heat being more evenly distributed. Despite the bad rap fats get, they're essential to our diets.

WHY DO WE NEED FATS?

Fats supply the body with energy and provide protection for the organs. They also assist in the absorption of nutrients and in the production of hormones. The body needs fat for vitamins such as A, D, E, and K to be absorbed. Scientist Vasanti Malik, of the Department of Nutrition at the Harvard T.H. Chan School of Public Health, states, "Your body needs a regular intake of fat. Fat helps give your body energy, protects your organs, supports cell growth, keeps cholesterol and blood pressure under control, and helps your body absorb vital nutrients."

Fats can affect the body's cholesterol level. Cholesterol is a waxy substance found in every cell. It's necessary to help build cell walls, digest food, produce hormones such as testosterone and adrenal hormones,

Different types of oils will lend varying tastes to the mix.

and produce vitamin D. The body produces the necessary amount of cholesterol for its needs, but cholesterol is also present in animal-based foods. Too much cholesterol results in cholesterol combining with other substances to form plaque, which adheres to artery walls causing atherosclerosis (plaque buildup). Blocked arteries can lead to coronary disease and death.

GOOD AND BAD FATS

There are four types of fats: saturated, trans fats, monounsaturated and polyunsaturated. Every gram of fat contains 9 calories, contrasted with the 4 calories per gram of protein and carbohydrates. Fats affect cholesterol levels in good or bad ways.

First, the bad fats: saturated and trans fats. These fats raise the levels of bad cholesterol in the blood. Bad fats retain a solid form at room temperature, such as butter and lard. Saturated fats come from animal-based products including meats and dairy foods, as well as palm oils. Trans fats originate from “good” fats (unsaturated fats) that have been processed at high temperatures, such as when vegetable oil (which is unsaturated) is used to make solid shortening or margarine (saturated), or other products labeled “partially hydrogenated fat”).

Always check labels and seek out the purest forms of oils.

The good fats that lower bad cholesterol in the blood are unsaturated fats: monounsaturated and polyunsaturated. These are plant-based fats that remain liquid at room temperature such as vegetable oils like canola oil (also called rapeseed oil), corn oil, olive oil, peanut oil, safflower oil, sesame seed oil, soybean oil and sunflower oil.

To distinguish the two, oils are fats which remain liquid at room temperature. Oils are used for cooking, and as an ingredient in foods, such as salad dressing and mayonnaise. Most vegetable oils are a combination of corn, canola or soybean oil. On the other hand, fats are solid at room temperature and are found in butter, ghee, lard, margarine, shortening and suet.

COOKING WITH FATS AND OILS

Fats and oils coat a cooking surface to create better heat distribution. They keep food from sticking to the pan’s surface. Butter and other solids burn faster than oils. To cook with oil, pour just enough in the pan to cover the cooking surface. Heat the oil slowly for about five to 10 minutes; this should reach an ideal cooking temperature of 350 F. There are several ways to test the “readiness” of the oil. One way to test the oil is to drop a bread cube into the oil. If the oil is ready, the bread will reach a golden-brown color in less than a minute.

Carefully place the food to be cooked in the pan. If cooking with butter, lard or grease (such as bacon grease), food should be placed in the pan immediately upon the solid turning liquid. Leaving a solid turned liquid in a pan for too long with no food will result in the solid fat burning. Foods shouldn’t be allowed to sit in melted fats or oils because they will absorb the oil, making

WHICH FATS AND OILS ARE INTERCHANGEABLE?

In baked goods, oils can be replaced by mashed apples, mashed bananas, pureed pumpkin, yogurt, mayonnaise and sour cream. The substitute can alter the taste of the finished product so select a replacement with the dish's other flavors in mind. Vegetable oils alter the taste of food less than other oils, and can be substituted for all oils. Olive oil can heavily flavor foods, but it can replace butter or vegetable oil. Butter can be melted in the same quantities specified in the recipe as a replacement for any oil, such as olive.

Likewise, oils can be substituted for butter, but they work best when melted butter is indicated. When a recipe calls for creaming butter and sugar, replacing all of the butter with oil might affect the recipe.

> AS MANY COOKS WILL TELL YOU, FAT EQUALS FLAVOR AND IF YOU CUT THE FAT TOO MUCH, YOU'LL BE DETRACTING FROM THE TASTE OF THE DISH.

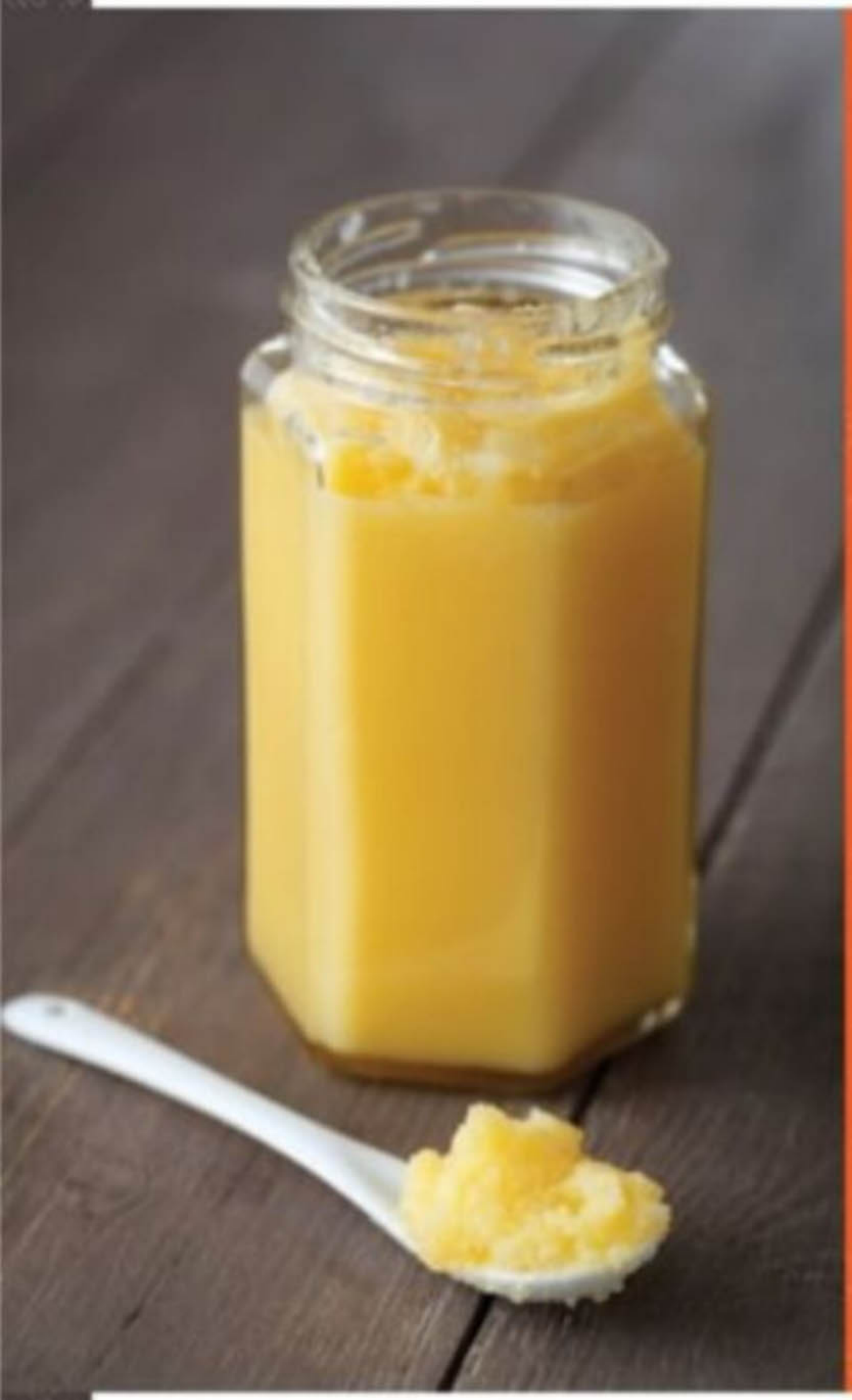
As a general rule, to replace 1 cup of butter, use ¾ cup of oil. Many oils can be combined when cooking without changing the flavors, such as canola with other vegetable oils. Vegetable oils can be used to mix with olive or sesame seed oil to dilute the stronger flavors of those oils. When a recipe calls for greasing baking dishes with solids such as butter, lard or bacon grease, you can use oil on a paper towel.

A note on bacon grease: Bacon grease and lard are basically the same thing except for the process and flavor. Bacon grease is typically just poured, in a melted state, from a pan into a container and stored as a solid. Bacon grease tastes bacon-y. Lard is a solid fat that has been repeatedly melted and strained to remove bits of meat and other impurities and is taste neutral. Ghee is butter that has been melted to remove the milk solids, resulting in pure fat. It reacts more like oil in a pan as it has a higher smoke point (burning point).

STORING FATS AND OILS

No fat or oil will last decades like some foods will. Restock your supply of fats on a rotating basis. On average, 5 gallons of oil will suffice for two to four people for three months. All fats and oils should be protected from air, heat and light. Plastic is less than ideal for storing oils. Transferring the oil to a airtight glass container will prolong its shelf life.

Fats and oils may be stored in the refrigerator or freezer, but oil may take on a cloudy appearance that won't affect the quality or safety of the product. The oil should achieve a normal color once it reaches room temperature. Most cooking oils will remain usable for one or two years if stored at room temperature and kept out of direct sunlight. The following is a list of



MAKE BUTTER IN A JAR

You can make butter at home with a little work and patience. Here's how to do it.

- **Option 1** 1 cup heavy cream, heavy whipping cream or raw cow's milk (non-homogenized)
- **Option 2** ⅓ cup water + ¾ cup powdered whole milk + ¼ cup oil + ⅛ teaspoon salt

Fill a 16-ounce jar with either option. Screw on the lid, then shake for at least 8 minutes or until a clump has formed. Shake for another minute. Notice that there is liquid (buttermilk) and solid (butter) in the jar.

Open the jar and place the butter in a mesh sieve (or use a rubber band to secure cheesecloth over a bowl). Save the buttermilk, if desired. Pour clean, ice-cold water over the butter twice. Shape the butter into a ball or stick. Store in the refrigerator or use it within 2 days.

Consider investing in a range of oils and experimenting with them in different recipes to see which ones you favor.

WHEN POSSIBLE, TRANSFER OILS TO AIRTIGHT GLASS CONTAINERS FOR STORAGE!

the shelf lives of some fats and oils:

- **Bacon grease,** room temperature, 6 months; refrigerated: 1 year
- **Butter, commercially canned**, unopened: 15 years
- **Butter, dehydrated/powdered**, opened: 2 years; unopened: 5 to 10 years
- **Butter, freeze-dried**, opened: 1 year; unopened: 10-plus years
- **Butter, frozen**, 1 year
- **Canola oil**, 1 to 2 years
- **Coconut oil (refined)**, 1 to 2 years
- **Coconut oil (unrefined)**, up to 2 to 5 years
- **Corn oil**, 1 year
- **Ghee**, room temperature, opened: 6 months to 1 year; refrigerated, opened: 1 to 2 years; unopened: 2-plus years
- **Lard, room temperature**, 2 to 9 months; refrigerated/kept at under 60 F: 12 to 18 months
- **Lard, vacuum-sealed**, 2 to 3 years
- **Palm oil**, 2 to 3 years
- **Peanut oil**, 3 to 4 years
- **Olive oil**, 3 years
- **Safflower oil**, 1 to 2 years
- **Shortening (hydrogenated oils) room temperature**, opened: 2 to 5 years; unopened: up to 10 years
- **Soybean oil**, 1 year
- **Sunflower oil**, 1-2 years
- **Tallow**, 9 months; best if stored in the freezer

WHEN FATS AND OILS GO BAD

Oils and fats eventually turn rancid due to exposure to heat, light and oxygen. Bacteria isn't usually an issue as it doesn't grow in oil. Oxygen is the biggest culprit in the rancidity of oils and this is why unopened oil will last longer. Rancid oils and fats will be noticeable by their smell, and sometimes by discoloration. The smell is usually strong and like old paint. Rancid oils taste bad and will ruin your food's flavor, but they aren't toxic.

Butter, though not oil, is classified under hydrolytic rancidity. Butter is about 20% water and the fats break down and react with the water, causing it to go bad. Ghee has a longer shelf life than butter because the water has been removed. Older oil will "gunk up" around the rim of the bottle or jar, and this is a sign that the oil is reaching its expiration.

CHAPTER 3

DIY PROJECTS

WITH SOME BASIC KNOWLEDGE AND A BIT OF ELBOW GREASE, YOU CAN DO ALMOST ANYTHING.

LIGHT UP

THE NIGHT

Don’t buy when you can make your own

BY CECI HAMPSON-ELLIS

CANDLES ARE AMONG THE OLDEST ARTIFICIAL LIGHT SOURCES KNOWN TO MAN. CONSISTING OF FUEL, SUCH AS WAX, FAT, OR OIL, SURROUNDING A WICK, CANDLES CAN BE USED FOR ILLUMINATION AND EVEN FOR LIMITED HEATING. THINK TEA LIGHTS TO KEEP A TEAPOT WARM.

There is evidence that during the Qin Dynasty in China candles were made from whale fat with rice paper wicks. Beeswax is one of the oldest fuels used, along with olive oil in the Mediterranean and animal tallow in the North. Fun little fact: A candle-maker is also known as a "chandler," from which we derive a common English surname.

Even in this modern era of on-demand electric light, who doesn't love candles? They come in a wide variety of colors and scents to add ambience to your evenings in addition to being a source of light and heat. Best of all, you can easily make your own.

There are essentially three different methods to making candles: They can be rolled, dipped or molded.

KEEP THEM CANDLES ROLLIN'

The simplest method of candle-making is rolling, which uses almost no specialized equipment, and is easy enough for children to do. You will need beeswax sheets available from bee supply stores or candle-making suppliers. The ones from bee supply stores are usually au naturel, with no dyes or scents as they are used for foundations in beehives. The sheets come 16 ¼ inches long by 8 ½ inches wide, the standard size for beehive frames. This is enough to make two candles. You will also need wicks, a hobby knife or scissors, a ruler, a smooth silicone or plastic cover to protect your work surface, and a blow-dryer. A No. 2 wick is recommended for rolled beeswax.

Be sure to clean your work surface thoroughly before you start, as you do not want to get stray crumbs, lint, hair or other things stuck in your beeswax. Place the silicone cover on your work surface, then top it with the wax sheet, with the honeycomb design on the bottom. Using a ruler and a knife, cut the sheet in half so you have two pieces that

The basic supplies needed are fairly minimal, but you can get as fancy as you'd like.

measure 8 ⅛ inches by 8 ½ inches. Cut a 9 ½-inch length of wick for each candle.

Place a long edge of a beeswax sheet closest to you, and lay the wick along the long edge so it extends at one end. If using a braided wick, make sure the 'V' is upright toward the top of the candle. Fold the edge of the wax over the wick and begin rolling. If the wax sheet is too stiff, it may crack if forced. Use the blow dryer to gently warm (not melt) the wax. Continue rolling, making sure the wax is evenly and tightly rolled. If it is too loose, the wick will burn too fast.

When you have about 1 inch left to roll, use the blow-dryer again to make sure the wax sticks to itself. Beeswax has a delicious honey scent and burns clean. These candles should last about 5 hours—more if rolled tighter, less if rolled looser.

Beeswax makes excellent candles and has a great scent while burning.

LET'S DIP

The second method is an ancient manner of dipping weighted wicks repeatedly in liquefied wax until you have the desired thickness. You'll make two candles at once with this method and you'll need additional equipment.

To make dipped candles, you will need:

- Beeswax or paraffin
- Double boiler
- Wicks (Use 15-ply wicks for thin tapers, 24-ply for candles thicker than ½ inch)
- Weights for the wicks such as metal nuts, fishing weights or coins
- Scissors or mat knife
- Candy thermometer
- Deep bowl of cold water
- Wax dye and/or fragrance (optional)

Note: Heated wax can ignite, so never leave it unattended. Remove from heat immediately if the wax begins to smoke or burn and lower the temperature before returning it to the heat source.

To begin, fill the bottom of a large double boiler with water and set it on the stove over medium-high heat. Add the beeswax or paraffin to the top section of the double boiler. If this isn't deep enough to accommodate enough wax for the desired length of the candles, you can use a large tomato juice can instead. Use a candy thermometer to make sure the wax temperature never goes above 200 F. (Ideally it should be about 165 F.)

Meanwhile, prepare your wick. It should be long enough for two

THESE CAN BE MADE JUST FOR USE AROUND THE HOUSE, BUT THEY CAN ALSO BE GREAT GIFT IDEAS FOR ANYONE ON YOUR LIST.

candles, plus about 12 inches (for you to hold while dipping the candles), plus 2 inches at each end. Tie a weight to each end.

Seal the wick by holding the wick at the center and dipping both weighted ends into the melted wax up to the desired length of the candle. The wax should harden within a few seconds of removing it from the pot.

Dip both ends in the wax again, then plunge into cold water. Repeat this process until the tapers are the desired diameter. You can hang your finished candles over a broom handle or dowel balanced between two chair backs, or cut the wick in the center and tie the ends to a hanger (see photo, right). Make sure the candles do not touch each other. Allow them to cure in a cool draft-free area for a couple of hours.

Once hardened, cut off the weights and dip the bottom ends of both candles in wax for a clean finish.

MAKE YOUR MOLD

For molded candles, in addition to the equipment listed above, you will also need molds. They can be made of silicone, or you can simply pour the wax into clean jars or cans after affixing the wick. If you're using purchased candle molds, poke the wick through the small hole in the bottom of the mold, leaving about ½ inch extending. Use duct tape to secure the wick to the bottom of the mold. Tie the top of the wick to a skewer or pencil and balance it across the top of the mold. Be sure the wick is centered.

Once your wax is melted, you can add color or fragrance if desired. Then, pour the wax in until it is even with the top of the mold. As the wax cools, it may form a bubble and bow upward. Use a skewer to poke a small hole in the bubble to deflate it. This will leave a dent. Pour in additional wax to fill it in, and repeat as necessary. You can put the mold in a water bath to help it cool faster. After the wax has completely cooled, you can unmold it.

WAX TYPES

There are five types of wax used to make candles, each with its own set of pros and cons. You can source wax from a candle-making supply shop or Amazon. I prefer Bulk Apothecary for fragrances and waxes.

- **Beeswax** is the oldest and most natural candle-making wax. It has a natural honeylike scent and varies from deep to pale yellow in color. It burns very clean with no smoke, and depending on the shape of the candle, may be dripless. It also burns longer than other waxes. However, it is the most expensive if you don't have a ready supply from your hives.

- **Paraffin** is a petroleum-based wax. It melts clear and is opaque when cool. You can easily add color. While it is relatively inexpensive, it does not burn clean. It burns with more smoke and puts soot into the air, which coats the candleholder and other things in your home. It also burns the fastest of the harder waxes.

- **Soy wax** also burns cleaner than paraffin wax. It is relatively inexpensive to source, but soy wax is soft and not suited for pillar or taper candles. It is best for candles in containers.

- **Palm wax** will hold and disperse fragrances better than soy wax, and it resists melting in summer, due to having a higher melting point than paraffin or soy waxes. However, it is more expensive than soy, and not as sustainable as beeswax.

- **Gel wax** is not technically a wax, but a mixture of resins and oils. It is clear, and you can add both color and fragrance to it.

Reusing containers like old candle jars, Mason jars or antique teacups requires a different way to attach the wick. Wick stabilizers—the little metal disks that hold the wick in commercially made candles—are the best way to do this and are inexpensive to buy. To use, push the wick through the hole and use a drop of melted wax to affix the metal piece to the center of the container. Ensure the wick or wicks are centered, then tie the top of the wick(s) to a skewer or pencil and balance it across the top.

Clear glass jars are great for making gel candles. Though gel is not technically a wax (see sidebar), it's fun to put in clear jars. You can add subtle color to the gel and also place objects in the gel, such as seashells or small toys for a delightful display. Keep any added objects near the outside of the jar so they don't catch fire.

Candle-making is fun for everyone in the family, and it's practical, too—the perfect indoor activity for those cold and rainy winter days.

Ceci Hampson-Ellis is a Phoenix-based freelance writer. She also volunteers at Liberty Wildlife caring for injured and orphaned wild animals while educating the public on why healthy wildlife is important.

USE A HANGER SO YOU CAN DIP SEVERAL CANDLES AT ONCE, INSTEAD OF JUST TWO!

Dipping candles takes a little time, but you'll find the end result to be pretty neat.

RAISE AN ALARM

Make your own early-warning system

BY CHRISTOPHER NYERGES

The earlier you're alerted to an intruder, the faster you'll be able to respond.

WHETHER YOU LIVE IN SUBURBIA OR IN THE FOREST, YOU USUALLY WANT TO KNOW IF SOMEONE IS APPROACHING YOUR HOME. SURE, EVERY BIG-BOX HARDWARE STORE SELLS LIGHT DETECTORS THAT GO ON WHEN THEY DETECT MOVEMENT, HIDDEN CAMERAS AND VARIOUS ALARM SYSTEMS. ANY OF THESE MIGHT BE WHAT YOU WANT AND NEED AS AN INTRUDER ALERT.

But possibly—maybe due to budgetary concerns—you want a low-tech way to know if someone has breached your perimeter. You want a simple booby trap, something that will make noise and that can be constructed from materials lying around your yard or garage.

THINK LIKE AN INTRUDER

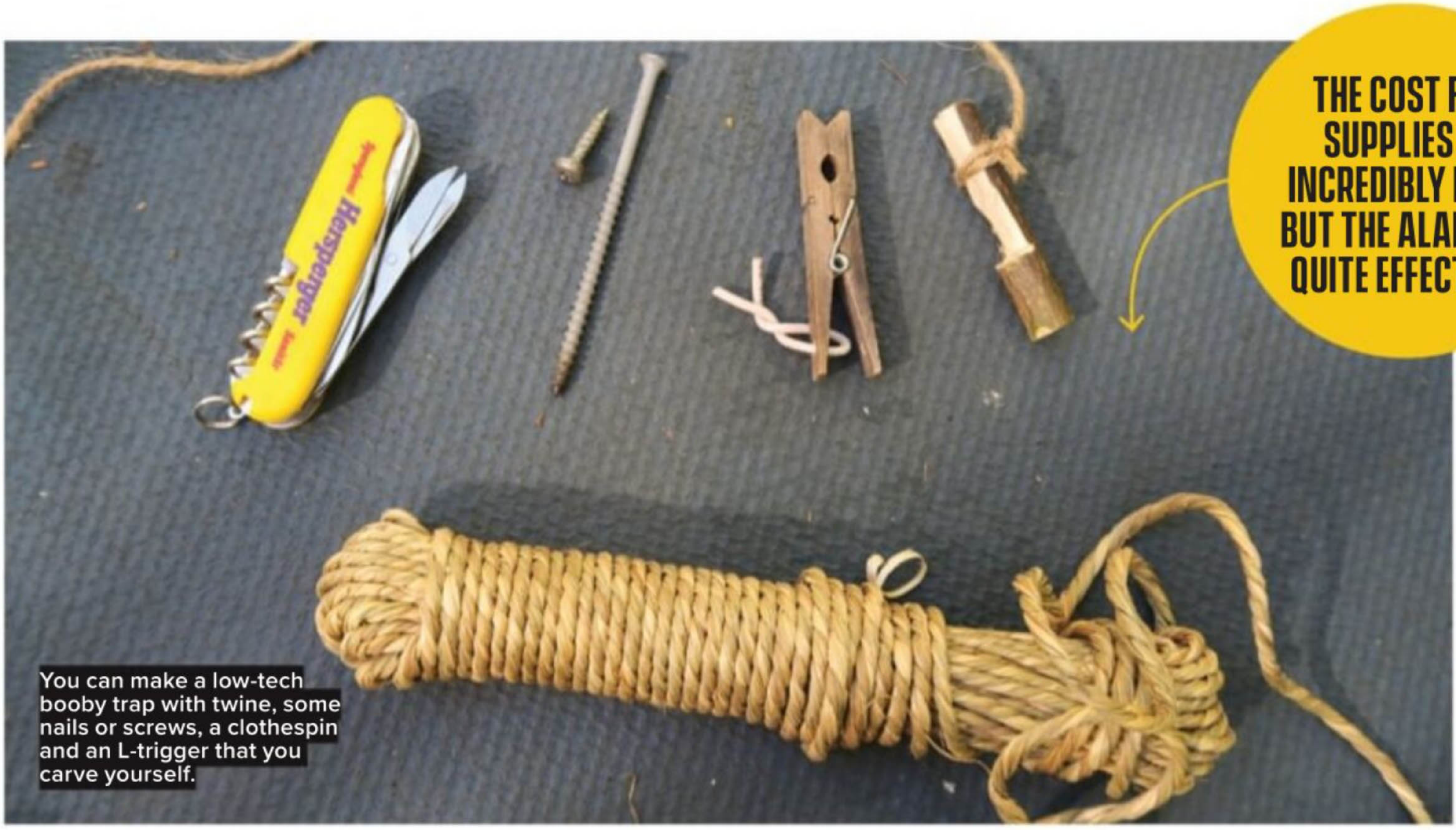
Whether you're defending an urban home or a forest cabin, ask yourself where someone would approach. An intruder probably won't enter through the main and obvious entrance, unless there is simply no other way to enter. So, which path would they choose? Walk around your place and think like an invader. Determine where an intruder might enter your property while trying to keep a low profile.

Don't overthink this; just find the path of least resistance where someone who shouldn't be there would likely enter your property. Though you might think that the possibilities are endless, in fact the real-world possibilities are somewhat finite. Once you identify the point (or points) of entry, your job is to set up some sort of booby trap with a wire or string. The basic idea is that the intruder trips the wire or string, which allows a weight or noisemaker to fall. This can be as simple as a burlap bag of glass bottles or soda cans, or some other object that, when dropped, will alert you that the perimeter was breached. There are many ways to do this.

Keep in mind that booby traps like those described here are indiscriminate, and even a stray animal could set one off. Though the ones we'll discuss are simple noisemakers, some booby traps can cause harm. Those are likely illegal, not to mention that they may hurt someone or something other than the intended target. Also, there is the chance that an intruder might be alert enough to see your trip wire, and will attempt to avoid it. There are no guarantees in life.

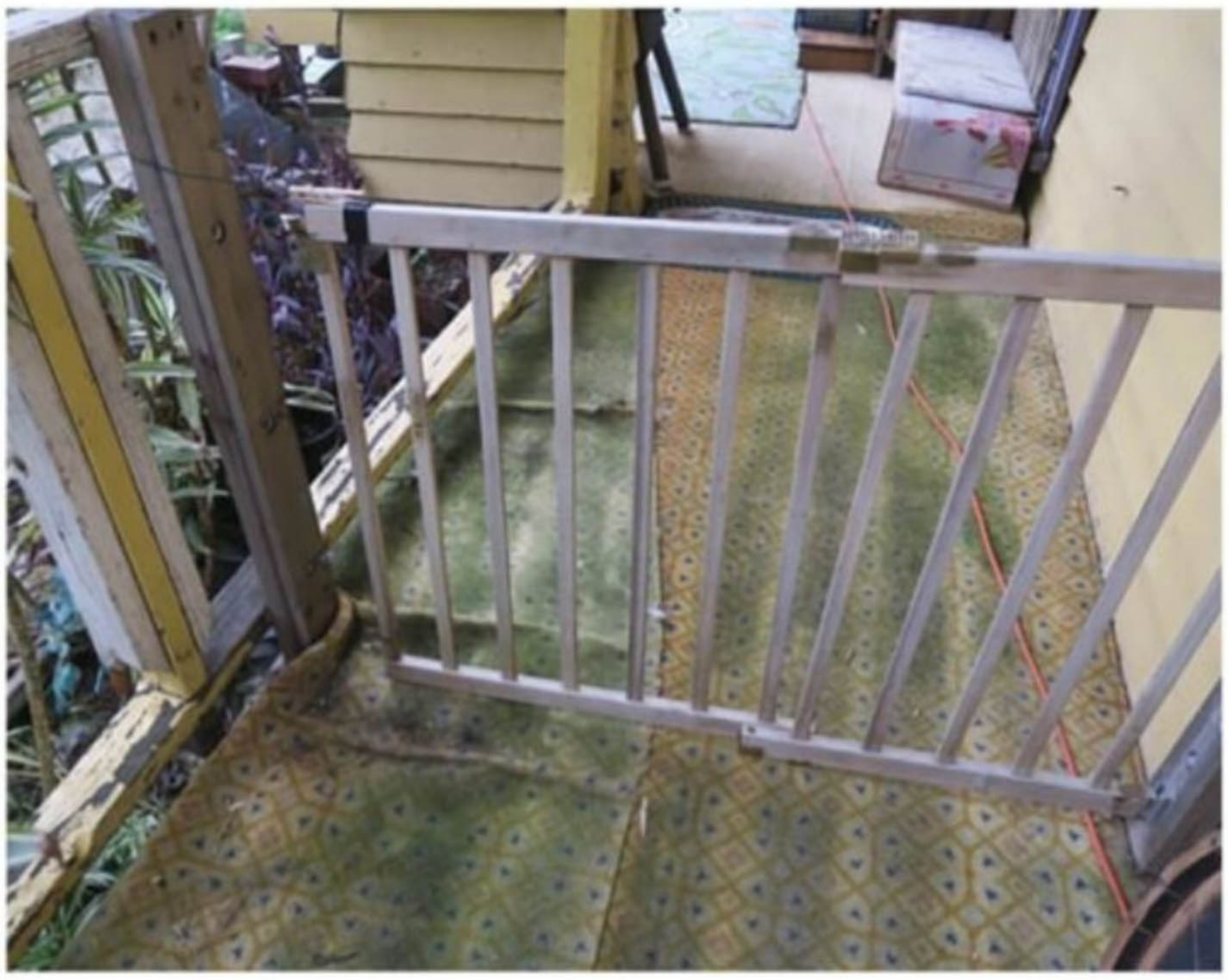
LOW-TECH

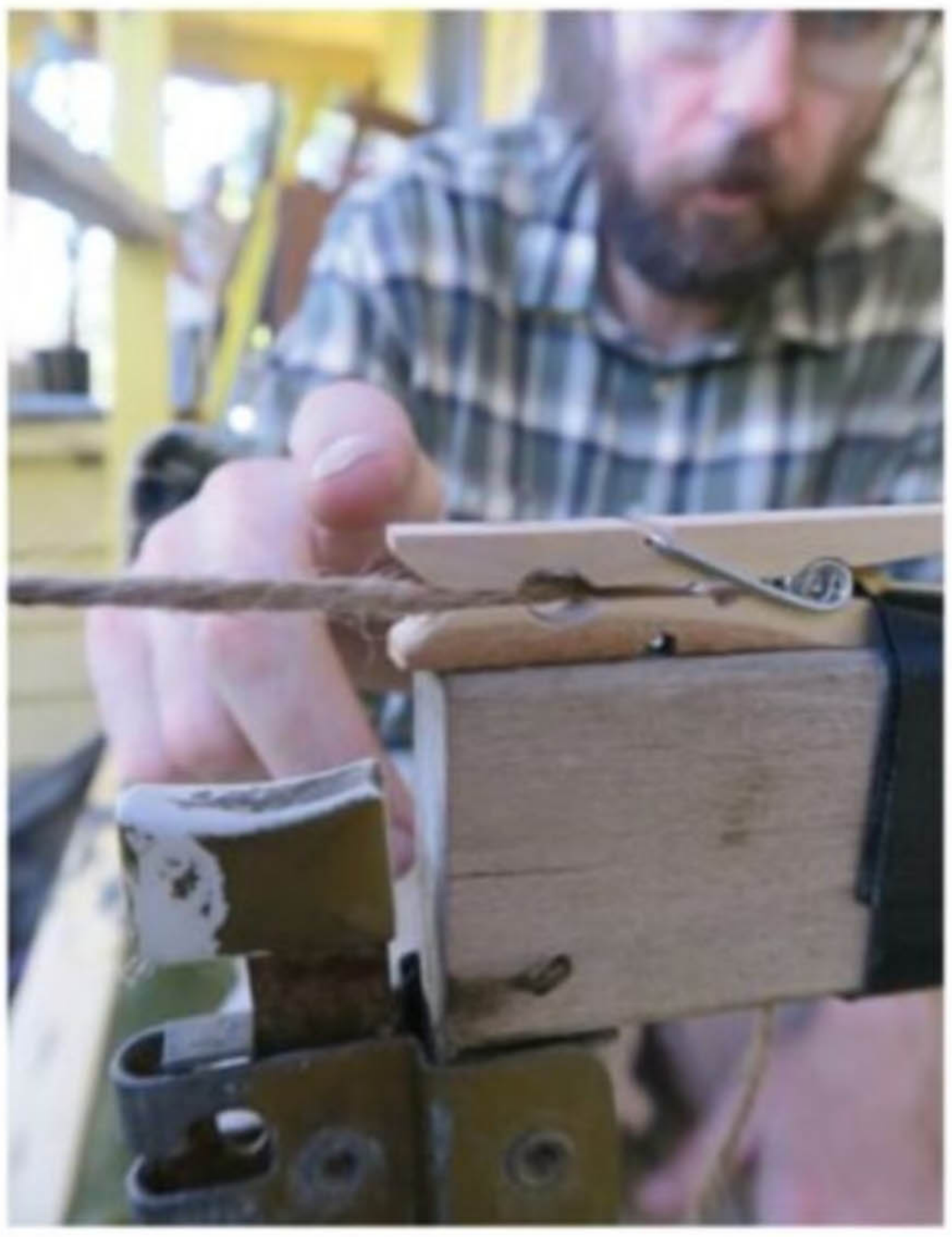
One of the simplest booby traps that we



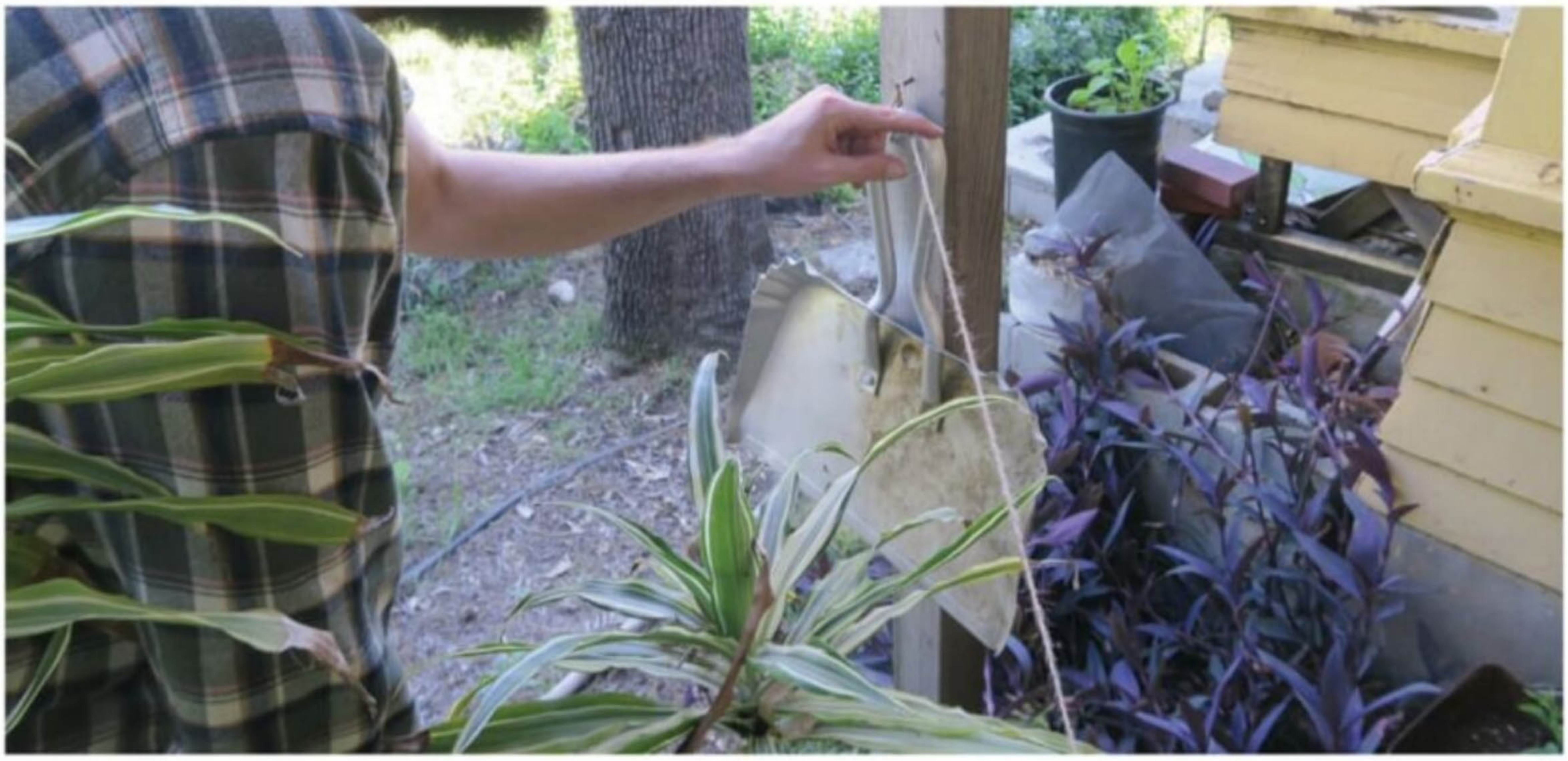
THE COST FOR SUPPLIES IS INCREDIBLY LOW, BUT THE ALARM IS QUITE EFFECTIVE!

You can make a low-tech booby trap with twine, some nails or screws, a clothespin and an L-trigger that you carve yourself.





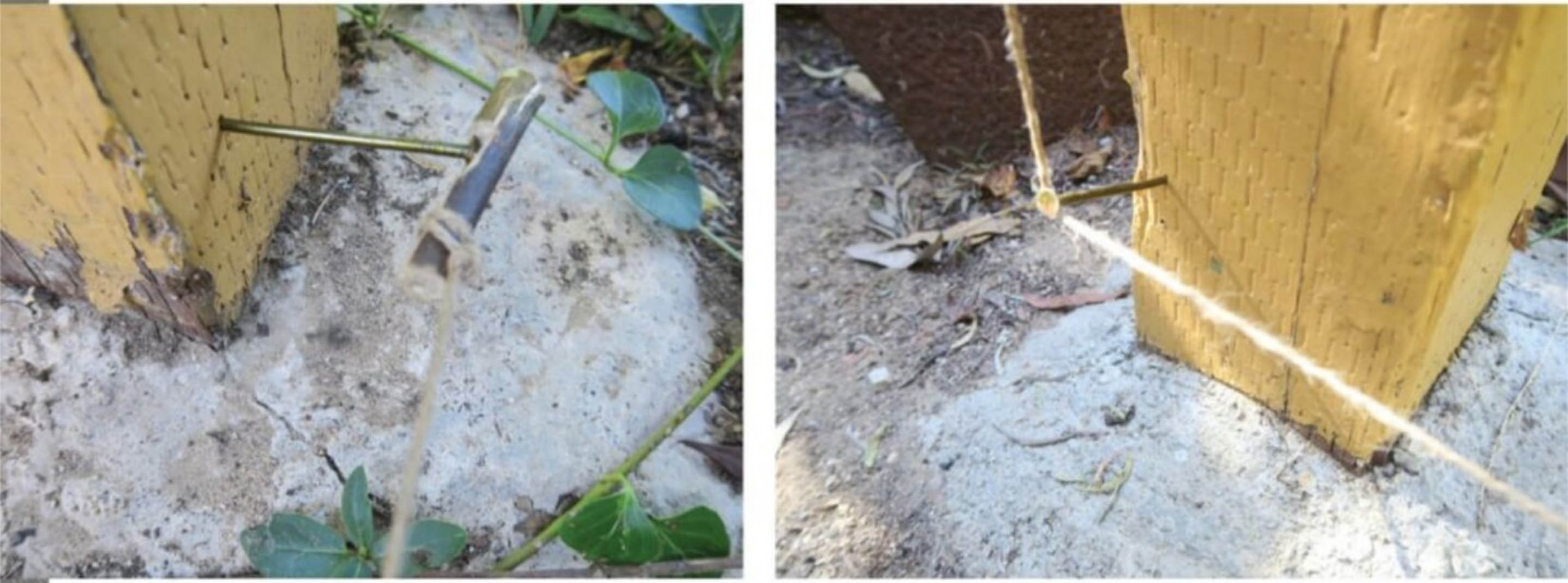
You can see the clothespin affixed to the upper left corner of the gate above. The string held by the clothespin runs to a metal dustpan. If the gate is opened, the string pulls out from the clothespin, releasing the dustpan so it falls to the ground.



ever set up was along a walkway where everyone had to enter, guest or thief. The walkway had a dog door attached, which everyone had to move aside to pass through. It was just a bit too tall to step over, so anyone coming through had to move it. And it seemed very benign—just a simple dog door on hinges in a passageway that you had no choice but to come through.

We attached a very thin wire to the grate which in turn was attached to an old metal dustpan. Anyone who moved the grate would disturb the wire and the metal dustpan would fall onto rocks below, causing a racket. An intruder would either freeze at that point or depart. And if the intruder stuck around, the people inside would be awake and alert and prepared to take further action if necessary.

Those of us who lived there always knew to slip the wire off the grate when we needed to pass through that area. We would slip the wire back on for the night, or if we were going out for a bit. For something so simple, it warned us many times that someone



This is the same sort of setup as the clothespin alarm, but the trigger consists of a piece of wood carved into an L shape. The line runs from the noisemaker (a bag filled with cans) to the L-shaped wood, which is in turn held by a nail. Trip the line and the noisemaker falls.

TRADER JOE'S

unexpected was there. On many occasions, it also told us that the resident raccoon had just passed through.

TRIP LINE

Another of the endless variations is to run a thin cord or wire low to the ground across the entry area. This horizontal line should be lightly attached to a tree or post, then run across the possible point of entry. The end of the line is looped over a nail (for example) and run up 6 feet or higher, where it holds a bag of cans or bottles or glass. When someone unwittingly hits the line, the trigger releases and the bag of noisemakers falls.

The trigger should be simple and tenuous. For our purposes, we set up the trip wire just a few inches above the ground. We will assume that the intruder must walk between two trees, or two posts, which can be 5 or 50 feet apart, though a shorter entry is easier to control.

First, drive a nail horizontally into one of the trees or posts. Drive another nail the same distance off the ground on the second tree, which is also where the noisemaker is located, horizontal but perpendicular to the first nail. Then, with one end of the trip line attached to your noisemaker, pull the line around that nail and then across the entrance. You need to secure a small L-shaped piece of wood (your trigger) to the line, and then you simply grab the head of the nail with the L-shaped wood. That's it. It's very simple!

You can experiment with various trigger mechanisms. You want something that will stay in place easily, but you also want it to release when someone knocks into it.

Instead of an L-shaped piece of wood, you can use a clothespin, which is secured by a little spring. A tug on the line should release the line.

When we have used wooden clothespins, we have secured them in various ways. One method is to simply duct-tape the clothespin to the post or tree. We've also drilled a little hole in the end of the clothespin, which allowed us to nail it securely in place.

Clothespins are easy to use, and the trip line usually readily releases from the "teeth" of the clothespin when someone bumps it. As a bonus, these are incredibly inexpensive to purchase if you don't have any on hand.

THE LINE

Your line should be lightweight and somewhat hard to see. Of course, this all depends if you're creating a booby trap for daytime or nighttime. Nighttime trip lines can be heavier, since most intruders won't be using a flashlight. Daytime trip lines might need to be less visible, and can sometimes be camouflaged so they are not readily noticed.

It has to be strong enough to be under constant pressure, and you want it to blend into the surroundings. Of course, whatever line you use will be most visible during the day, and less visible at night, when a prowler might be lurking about. I've found 10-pound jute line to be a good overall line for this sort of project. You can also purchase standard trip wire or Kevlar string, or you can just make do with what you already have on hand.

There's no right or wrong here, since every situation is a little different. We've used bank line, and even polyester surveyor cord. The cord has to be able to hold whatever weight you have for a noisemaker, and it should withstand pressure. If your line is up for any length of time without maintenance, some cords tend to stretch, and thus become less effective.

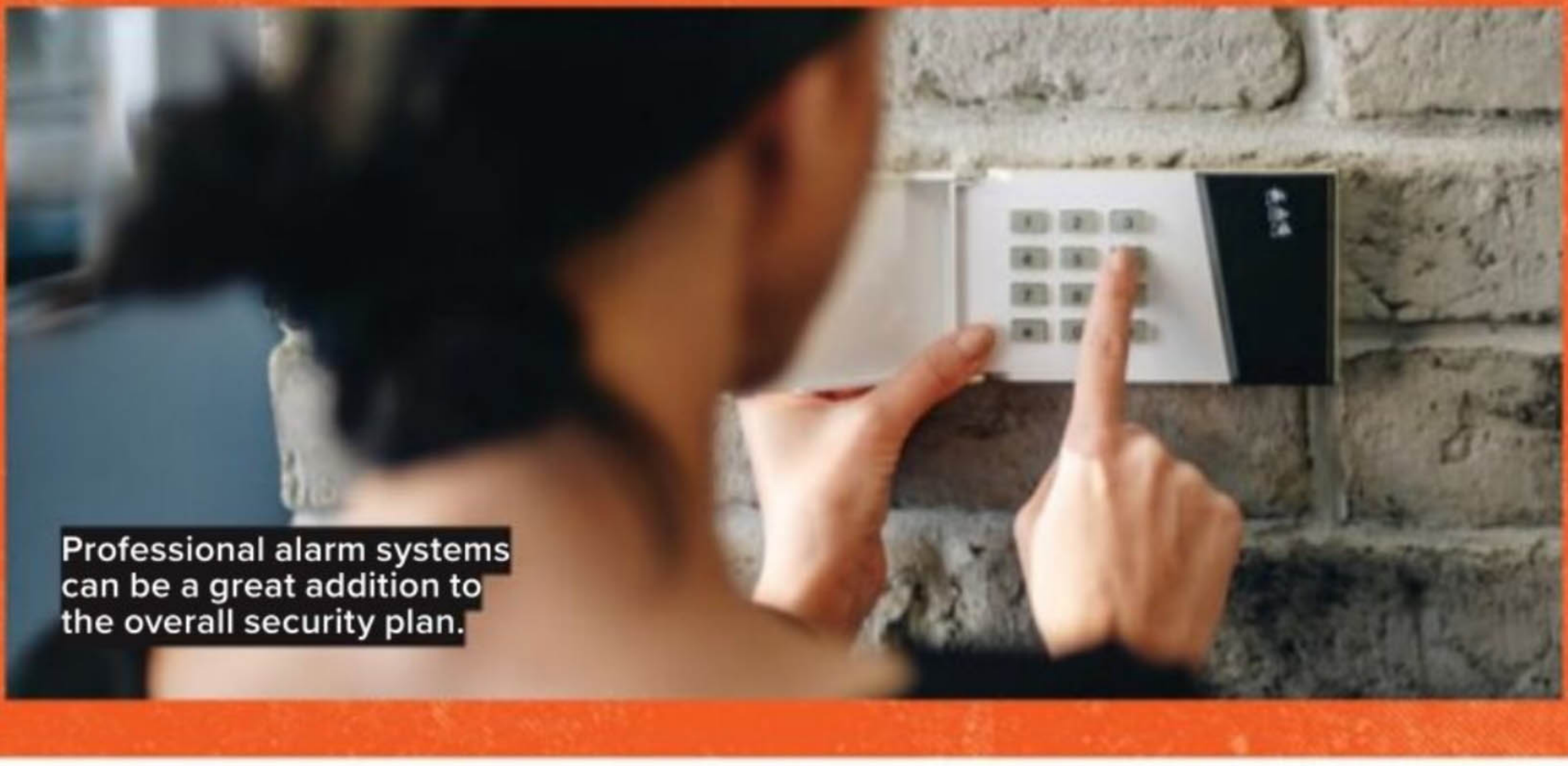
Everything you need for this project can be purchased from any hardware store, and in a pinch, you can make everything from wood, cordage and your knife.

STORE-BOUGHT ALARMS

Some of you may simply want to buy a commercial alarm product. There are many out there to choose from. Most of the commercial alarms require electricity or batteries, and all require some periodic inspection. Here are a couple of recommendations.

You can get everything you need for a perimeter alarm kit from Fith Ops (fithops.com) to set up a perimeter alarm that uses firearm blanks to scare away a bear or other predator. The price ranges from $50 to $80, depending on your needs. A kit includes the trip alarm, adaptors, line and an ejector pin.

You can also get a wireless solar-powered driveway alarm that will give a beep in your home when someone passes a defined point. The one by eMacros has range of about a half-mile and is weather resistant. You can find it on Amazon in the $40 price range.



Professional alarm systems can be a great addition to the overall security plan.

Christopher Nyerges is the author of nearly two dozen books on wild foods and self-reliance. He's taught classes in survival skills and foraging for decades, and his class schedule can be seen at schoolofself-reliance.com.

SHINY!

Check out this multipurpose kitchen helper

BY ANGELINE HAWKES

WHETHER YOU CALL IT TIN FOIL, FOIL OR ALUMINUM FOIL, ALMOST EVERYONE HAS A BOX OF THE SHINY STUFF IN THEIR KITCHEN. YOU MIGHT REMEMBER TV ANTENNAS WITH WADS OF FOIL ON THE ENDS TO BETTER PICK UP CHANNELS. OR MAYBE YOU REMEMBER TV DINNERS FROZEN IN MOLDED FOIL TRAYS WITH PEEL-AWAY FOIL TOPS? THE USES FOR ALUMINUM FOIL ARE MANY—AND NOT JUST RELEGATED TO THE KITCHEN.

ABOUT ALUMINUM FOIL

It's sometimes referred to as tin foil—but there's no longer any tin in foil. Shortly after World War II, the less expensive aluminum foil, made of 98.5% aluminum (with some iron and silicon for strength), replaced "tin" foil. Aluminum foil has been around since about 1903. Robert Victor Neher filed the first patent for the continuous rolled version in 1910 and began manufacturing it in Switzerland. Gum and chocolate companies wrapped their products in the silver stuff. The 1920s saw the rise of foil marketed as a household helper. In the '50s, foil got a huge boost with convenient TV dinners ready to heat and serve in foil trays, as did the popularity of homemade spaceman costumes.

SHINY VS. MATTE SIDES

Creating foil involves a process known as milling. Tension and heat are used to form and stretch the aluminum. The molten alloy is rolled between water-cooled rollers to stretch the aluminum thin. Two layers are combined and milled together because one layer would not withstand the stretching process and would break. The shiny side of the aluminum foil is milled against the steel rollers of the machine. The dull side doesn't receive the polishing that the other side receives from contact with the rollers. This doesn't change the function of either side of the foil, and both sides perform equally well.

COOKING WITH FOIL

When food is covered with foil, the foil reflects heat, slowing the cooking process. This allows food to retain moisture and slows the rate of the cooking speed. Both sides of the foil will heat food, but the shiny side reflects heat and the matte side reflects less heat. Except in the case of aluminum foil marketed as nonstick aluminum foil, there's no difference in the performance of either side. In the nonstick variety, the dull side is the side treated with a nonstick coating and should face the food. Aluminum foil has a melting point of 1220 F. Most household ovens only reach temperatures of 550 F, with the self-cleaning feature of some reaching up to 1000 F. On some models, a large coil on an electric stove can reach 1652 F. It's more likely foil will catch fire or melt on a stove coil than inside of an oven. Because of this high melting point, aluminum foil is often used for cooking over fire, such as on a grill or a campfire.

Household aluminum foil is about 0.016 mm thick. Industrial strength foil measures about 0.024 mm thick. Thicker aluminum foil has been used for fire-proofing properties. One fire department in California wrapped redwood tree trunks in foil to act as a fire barrier to protect the trees from fire.

WAYS TO COOK WITH FOIL

Aluminum foil has little to no odor. This makes it good for wrapping food because it won't transfer odors to food. It's also airtight and nonporous. Completely

Many scouts, both boys and girls, have learned how to assemble quick meals by combining hamburger, potatoes and veggies in foil to cook in campfire coals.

WHEN YOU SEE THIS OVER THE CAMPFIRE, YOU JUST KNOW DINNER WILL BE GREAT!

Foil can certainly be used to give a science-fiction look to any project.

wrapping something in foil creates an airtight barrier except where the foil joins by folding or wrapping. This keeps food from drying out quickly or from absorbing outside odors. Fruit acids, vinegar and fermented acids from foods such as sauerkraut will have a chemical reaction with aluminum foil, causing it to darken. If this happens, the food that made contact with the foil may take on a metallic taste, but it's still safe to eat.

Foil can be used to cover a grill or grate to form a flat surface to use as a griddle over a fire. Food can be wrapped in foil for cooking in an oven or over fire. A skillet or pot can be fashioned from aluminum foil by folding several layers into the desired shape. These cooking vessels won't withstand rigorous cooking or reuse, but will work to boil water and cook food. Solar ovens can be created by covering cardboard with foil, forming a box, and using the reflective rays of the sun to heat and/or cook food. A quick search online using your favorite search engine will quickly turn up detailed instructions on how to make solar cookers utilizing aluminum foil.

FOIL CAN COLLECT AND HOLD WATER, COOK FOOD, BE MADE INTO A CANDLEHOLDER, FORMED INTO BOWLS OR PLATES AND SO MUCH MORE.

You can use it to wrap sandwiches to keep them fresh while you travel to your picnic destination.

EMERGENCY USES FOR FOIL

It might seem strange, but in addition to having a roll of aluminum foil at home, it's also a good idea to take some camping. Foil can be formed into a container to hold water, collect rainwater or cook food. Foil can be formed to make dishes and cups. A nice wad of foil can be formed into a candleholder. Sheets of foil can be used as a reflective device for emergency signaling. Hold up foil as a wind blocker when trying to light a fire. And, of course, foil can be used to wrap anything needing wrapping.

BE CAREFUL WHEN USING FOIL AROUND DRAIN CLEANERS, BAR SOAP, OVEN CLEANERS AND HOUSEHOLD DETERGENTS.

HOUSEHOLD USES FOR FOIL

Foil has many uses around the home. Create a funnel from foil by forming a triangle, folding over the edges to seal, and cutting a hole in the end. Bonus: Cutting foil with scissors will clean the blades. Line drawers with foil.

Another great use for foil is for cleaning silver. Baking soda, aluminum foil and boiling water will utilize electrolytic action to remove tarnish from silver. It's easy: Line a baking dish with foil, shiny-side up. Add 1 cup of baking soda to the dish. Place tarnished silver in the dish. Cover the silverware with boiling water and allow it to soak until the silver begins to look shiny (30 minutes or more). For really bad tarnish, wrap individual silver pieces in foil and add ½ cup white vinegar to the baking soda and aluminum foil dish, then cover with boiling water.

While aluminum foil looks similar, emergency blankets are made from a different shiny material.

Foil can be folded into pouches and envelopes. Use foil to temporarily waterproof a basket or other porous container for water containment. Aluminum foil can also be used to insulate home windows. First, cut cardboard to snugly fit each window and then cover each cardboard piece with aluminum foil. Face the shiny side of the foil-covered cardboard out. This will help cool the house by reflecting sun away from the windows. Use foil to further fireproof documents inside a fireproof box or in any situation where fireproofing is required. This method isn't 100% effective, but it may keep paper from being scorched.

Even the box the foil comes in may have a use once it's empty! Snip the metal, serrated cutting strip into pieces to affix to the back of wall decor frames to use as hangers over a nail or screw.

CRAFTING WITH ALUMINUM FOIL

Due to the ability of foil to be shaped like clay, it has many crafting purposes. Cover cardboard shapes, such as stars, with foil for shiny holiday ornaments. Cover cardboard shields, crowns or helmets with foil for a knight's armor, a princess's crowns or astronaut costumes. Shape foil into beads. Make pendants by drawing a design onto a cardboard shape with school glue. Let the glue dry, then place a piece of foil over it, rubbing it with your fingers. The foil will reveal the underlying dried glue design in relief. Glue the foil edges behind the pendant.

LIMITATIONS OF ALUMINUM FOIL

Most people know foil cannot be used in microwave ovens because electric currents react with metal. Overwhelmed by electric currents, foil will ignite inside the microwave oven. Foil will have an adverse chemical reaction with sodium hydroxide and form flammable and explosive hydrogen gas. Sodium hydroxide is also called lye or caustic soda and may be found in drain cleaners, bar soaps, household detergents and oven cleaners.

MEAL IN A POUCH

This meal is easy to make in a foil pouch, cooked in an oven, over a campfire or patio grill, or even baked in the hot coals and embers of the campfire.

Take a rectangle of aluminum foil and place your ingredients in the center—for example, meat, sliced potatoes, onions and carrots. Add seasonings of your choice (paprika, garlic, salt and pepper work well). Fold the edges of the foil tightly, forming a secure pouch so nothing leaks out.

In the oven, place the pouches in an oven preheat to 400 F. Cook the pouches for 25 to 40 minutes.

Over a campfire or on a grill, cook on a grate for about 20 minutes, turning the pouches once or twice to ensure even cooking.

In the hot coals and embers of a campfire, form the coals into a mound and place the pouches on top. Cover the pouches with more hot coals and let cook for 20 to 25 minutes.

Whole potatoes, carrots and apples may be wrapped in foil and baked in the same manner.

THESE AREN'T DIFFICULT TO MAKE, BUT THEY DO REQUIRE A LITTLE PRACTICE !

A secret to the toggle trigger is including a small twig to act as a roller bearing that reduces the contact between the two pieces.

TRIGGERED

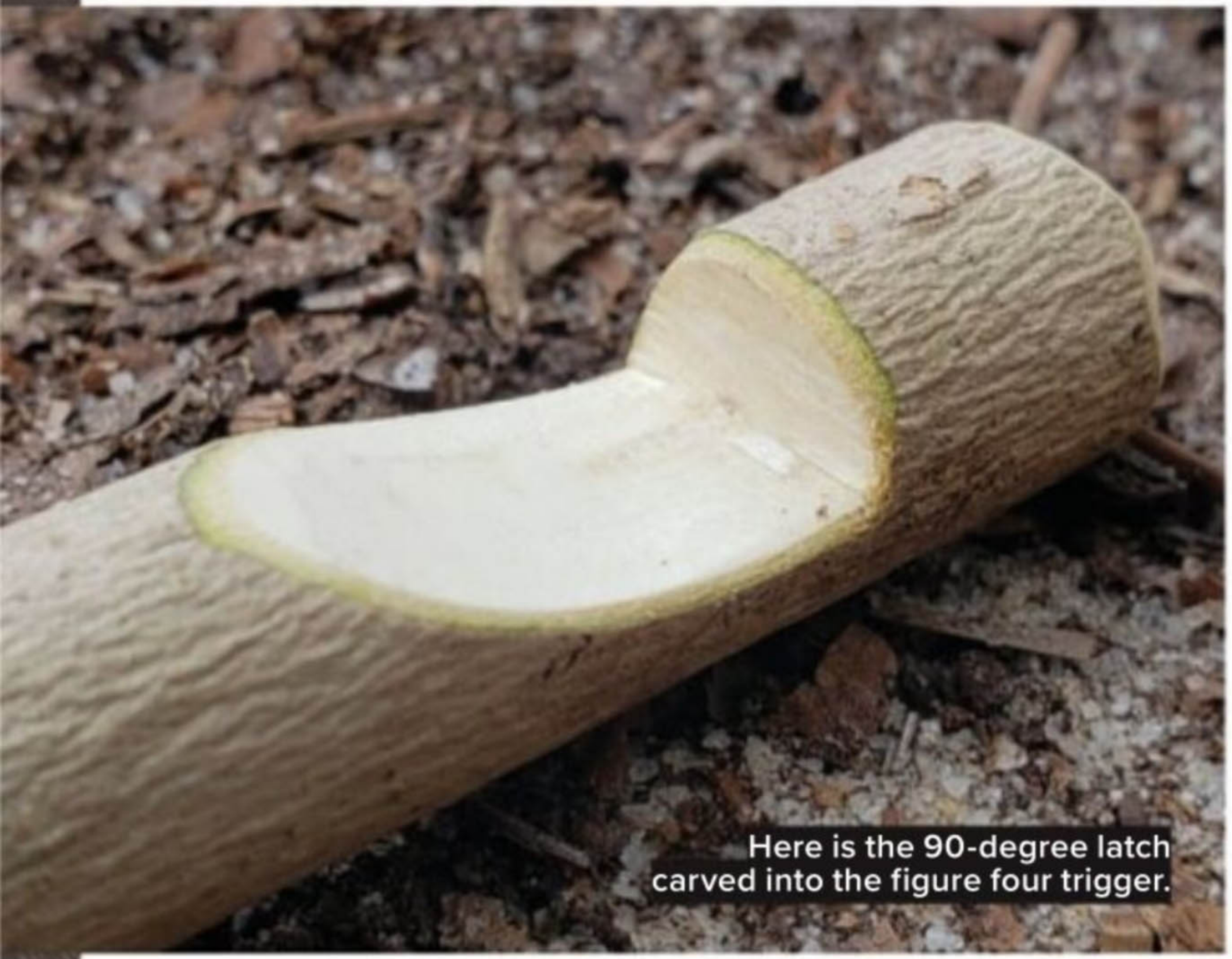
Take the time to make your own

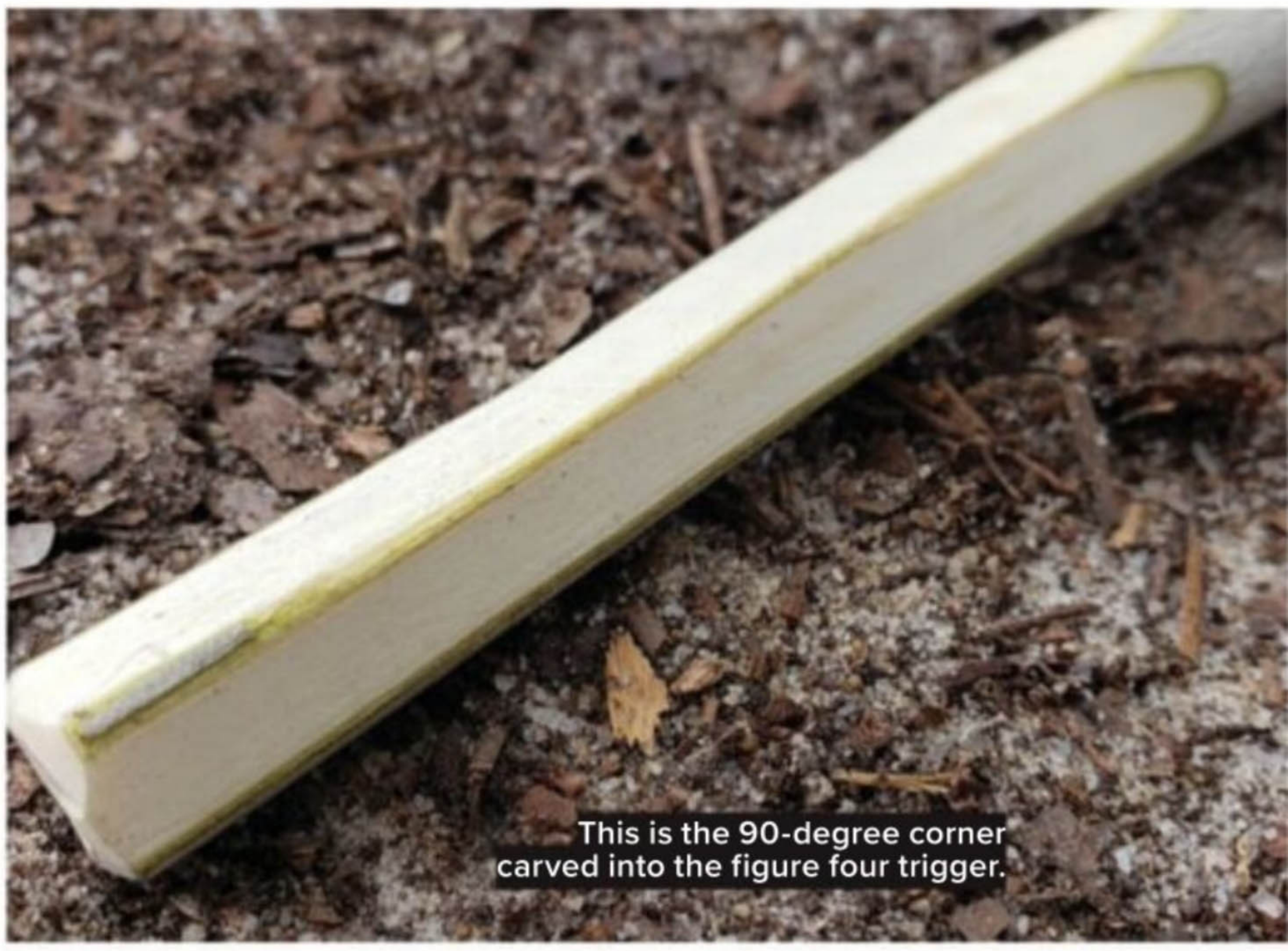
BY KEVIN ESTELA

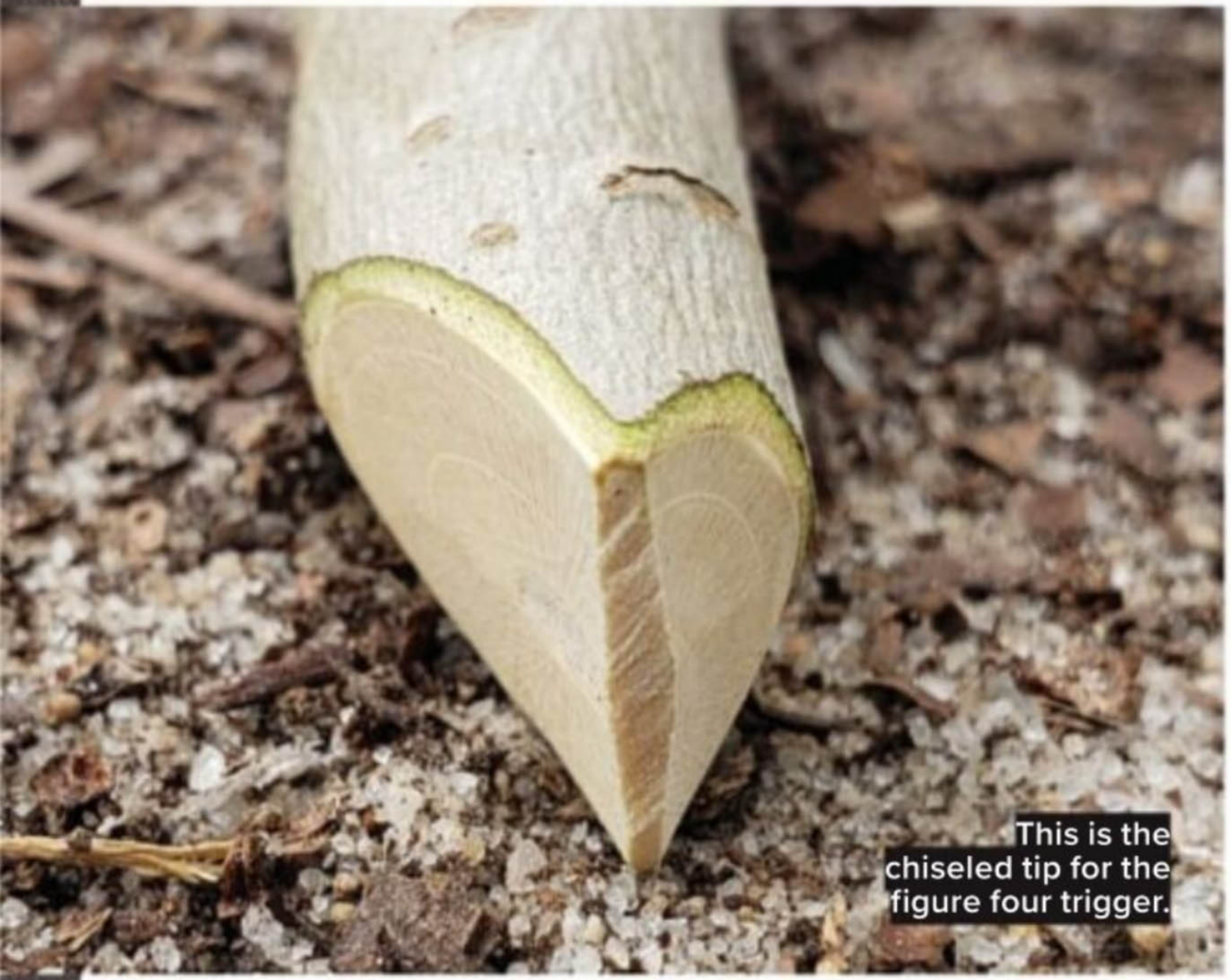
AN ALLURING ASPECT OF BUSHCRAFT AND PRIMITIVE SKILLS TRAINING IS TRAP MAKING. TRAPPING IS AN EFFICIENT WAY OF USING ENERGY WHEN IT MUST BE PRESERVED. KNOWING HOW TO CATCH ANIMALS IN THEIR HABITAT WITH NOTHING MORE THAN WHAT YOU CAN CARVE AND BRAID FROM OFF THE LAND INSPIRES CONFIDENCE, A SENSE OF CONTROL IN THE BACKCOUNTRY—AND IT HELPS RETURN CALORIES IN A DEFICIT.

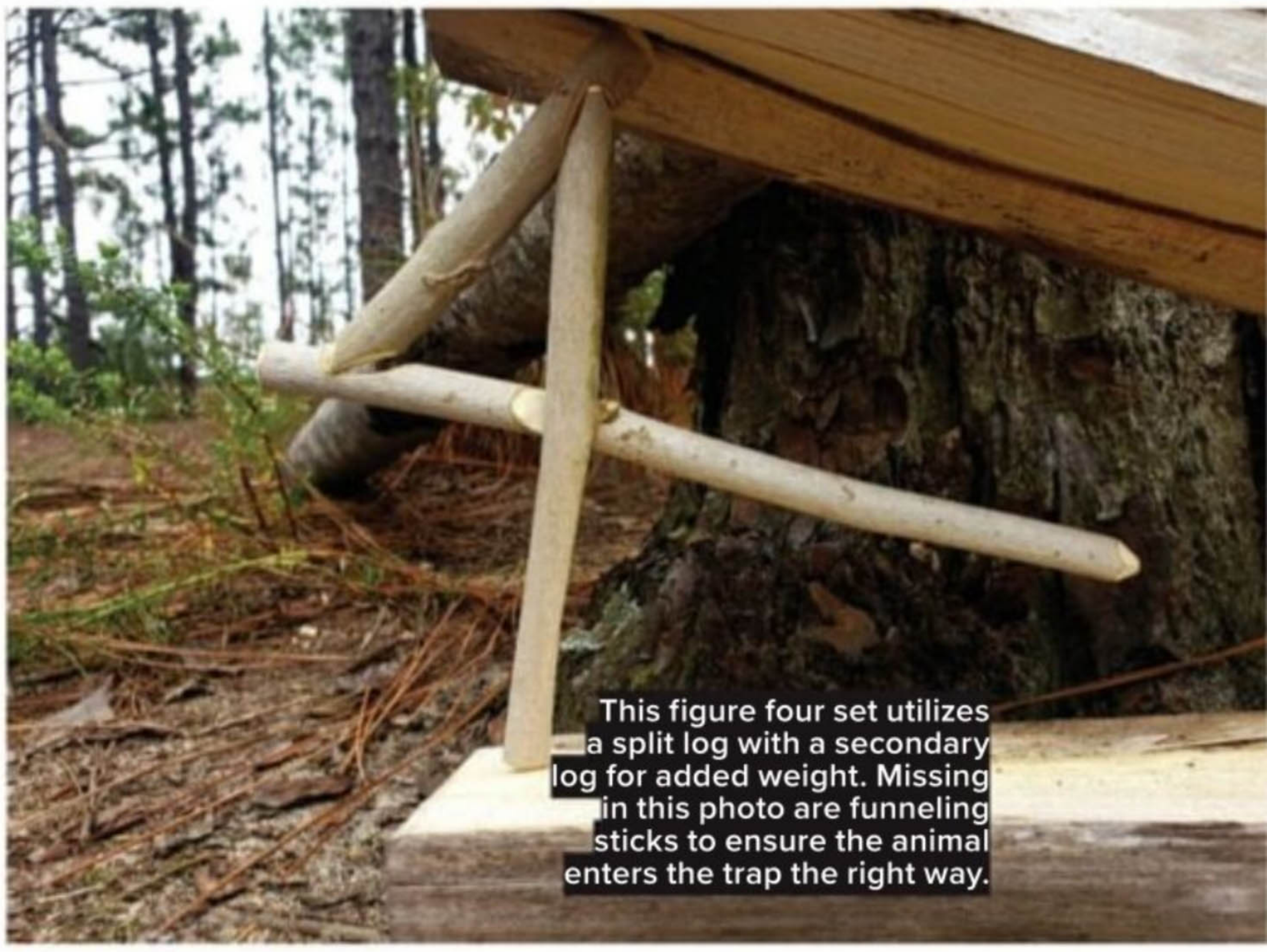
Part of any good trap is the trigger system. That's what determines how sensitive the trap is and how effective it will be. There are many commonplace triggers that have appeared consistently in timeless trapping manuals. The reason these triggers are always included is because they represent the fundamentals and work well when executed properly. The three trap triggers presented here are similar to the original root languages that evolved into the numerous dialects the world speaks today. Rather than just developing a surface-level knowledge of many, you can do a deep dive on just a few you must know.

Prior to constructing any trap trigger, you must establish the best materials to use for the moving parts. A common mistake is to assume all wood is the same. In any given forest, you'll find living greenwood, dead standing, dead rotten, and combinations of hardwood and softwood. The traps featured here were carved out of greenwood that ranged in thickness from ½ inch to an


Here is the 90-degree latch carved into the figure four trigger.


This is the 90-degree corner carved into the figure four trigger.


This is the chiseled tip for the figure four trigger.


This figure four set utilizes a split log with a secondary log for added weight. Missing in this photo are funneling sticks to ensure the animal enters the trap the right way.

inch wide. Whenever possible, greenwood carving is ideal as it eventually becomes dry, harder and tougher. The properties of the wood selected will determine how easy the wood is to carve, how much weight bearing it can take, and how durable the trap trigger will be with repeated testing, tweaking and use. (Read more about the differences in wood and their uses in "Multitools of the Wilderness," page 20.)

The difference between sensitivity and failure with a trap trigger can come down to many variables, but one of the most important is how clean the cuts are made on mating surfaces. Think of making as smooth of a cut as possible instead of leaving behind a rippled edge that will work like micro speed bumps. While a skilled outdoorsman can use virtually any knife to create trap triggers, a small folding knife like a saw-equipped Swiss Army knife or multitool will make cutting stop cuts a simple task. Additionally, instead of removing all of the bark on a branch used to make a trigger, limit what you take off to preserve the natural appearance of the materials used.

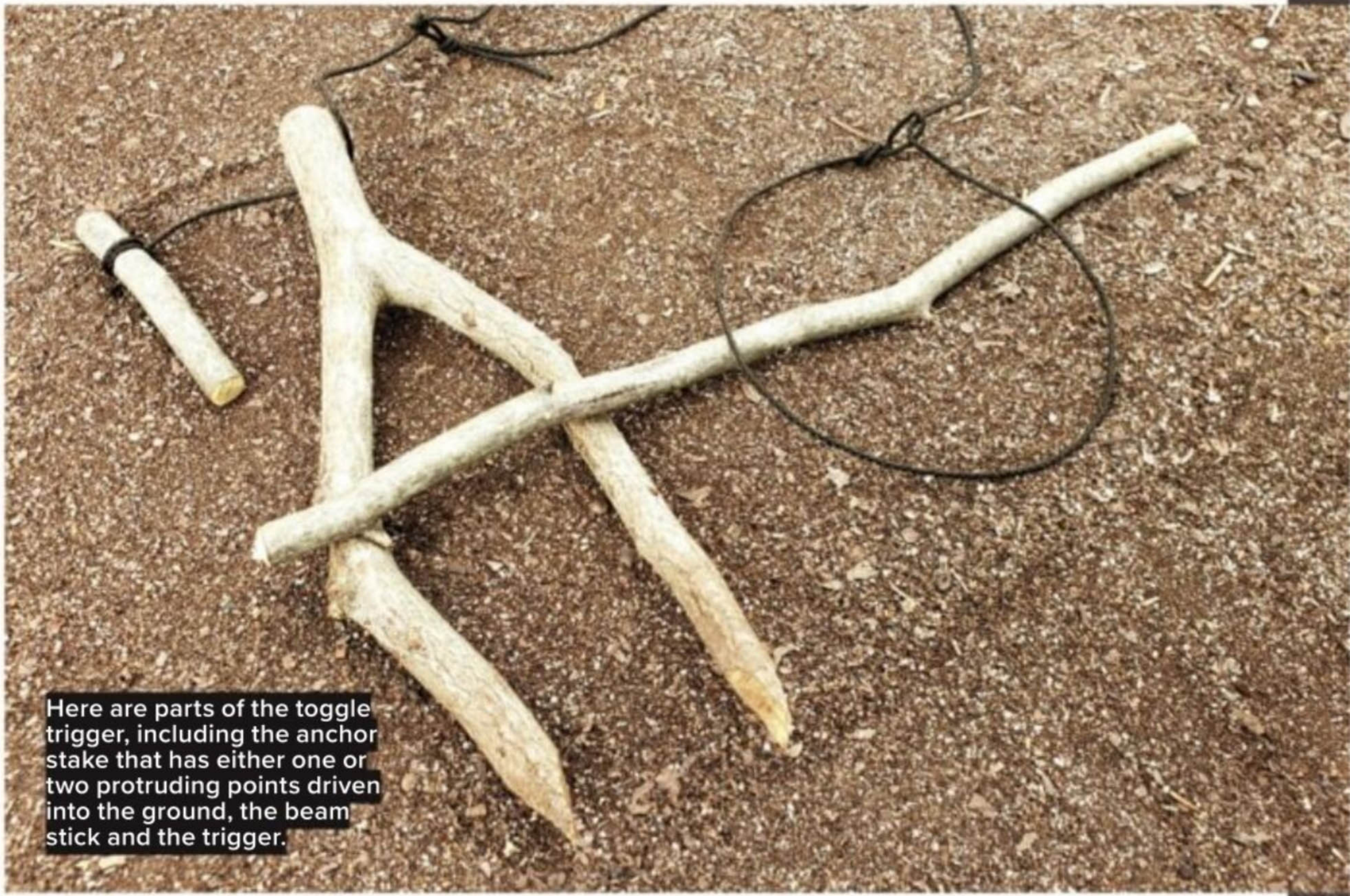
TOGGLE

The L7 trigger is characterized by two 90-degree latches that use opposing pressure to hold the trap trigger in place. It can be used for lifting snares as well as for crushing rock traps, and it can be modified with a spring pole for fishing. The 90-degree latch can be carved into existing root systems, making an incredibly strong anchor that has little chance of pulling free from the ground. One modification to help the trigger release with less friction is adding a small wooden dowel made from a smoothed-out branch between the flats that make contact with one another. This can help make the trigger more sensitive as it reduces the friction and serves as a roller.

The L7 trigger is activated when the subject/prey pulls on the L via a length of cord attached to it. Ideally, the direction the trap is set should reflect the way the toggle parts will disengage. The toggle trigger can be scaled up to hold incredible weight and it can be used in any orientation with any direction of pull. A groove can be carved around the circumference of the toggle pieces to attach cordage, or a tapered chisel with a hole "drilled" through it can be used for a straighter pull.

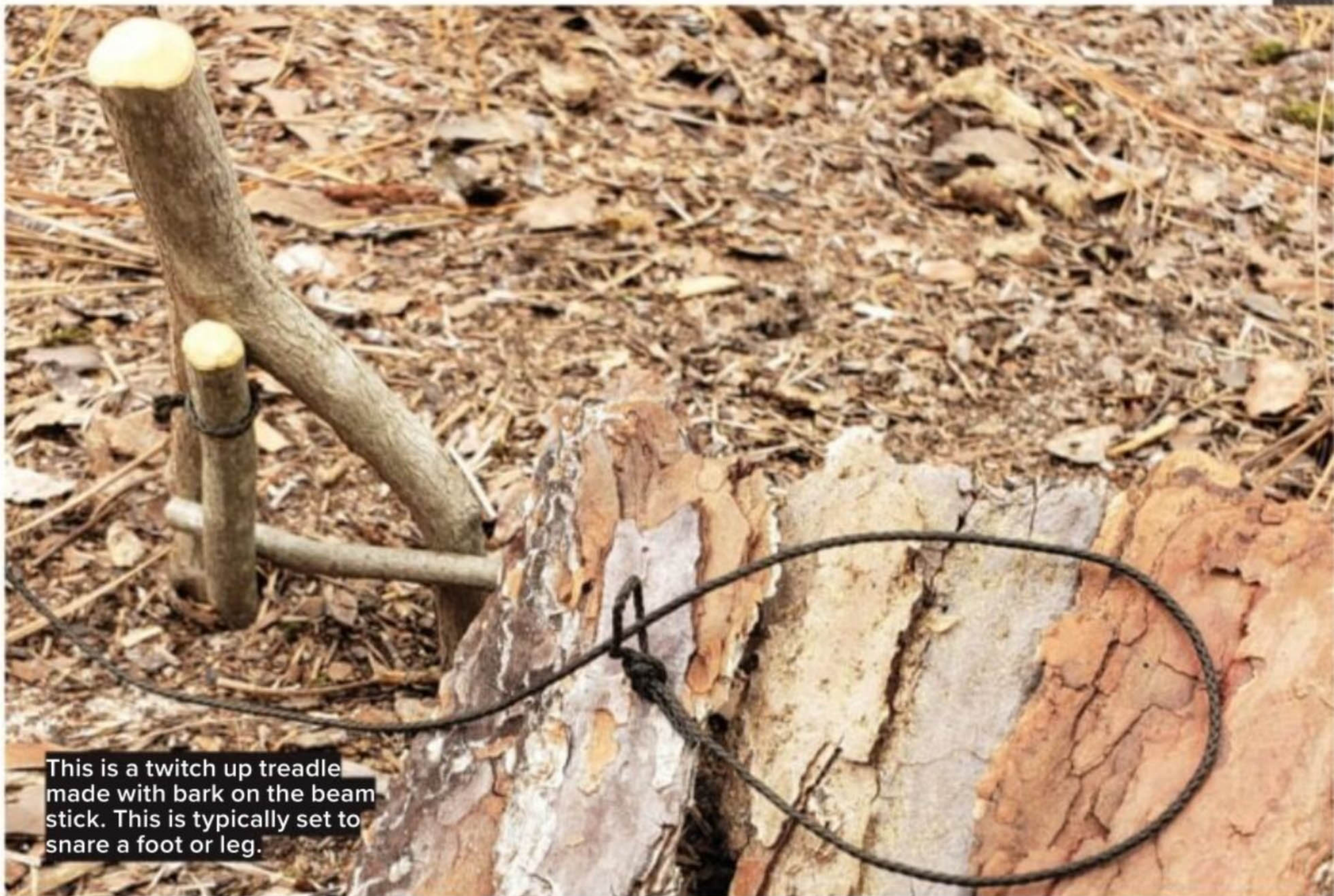
TWITCH UP

The twitch up is a classic trigger mechanism that requires minimal carving and only three components. It is powered by multiple types of engines and setting a twitch up set is easy. Despite the ease of placing the trigger inside the forked anchor



Here are parts of the toggle trigger, including the anchor stake that has either one or two protruding points driven into the ground, the beam stick and the trigger.

CHECK LOCAL LAWS BEFORE SETTING ANY TRAPS UNLESS YOU ARE IN A TRULY DIRE SURVIVAL SITUATION, AS THEY ARE OFTEN ILLEGAL.



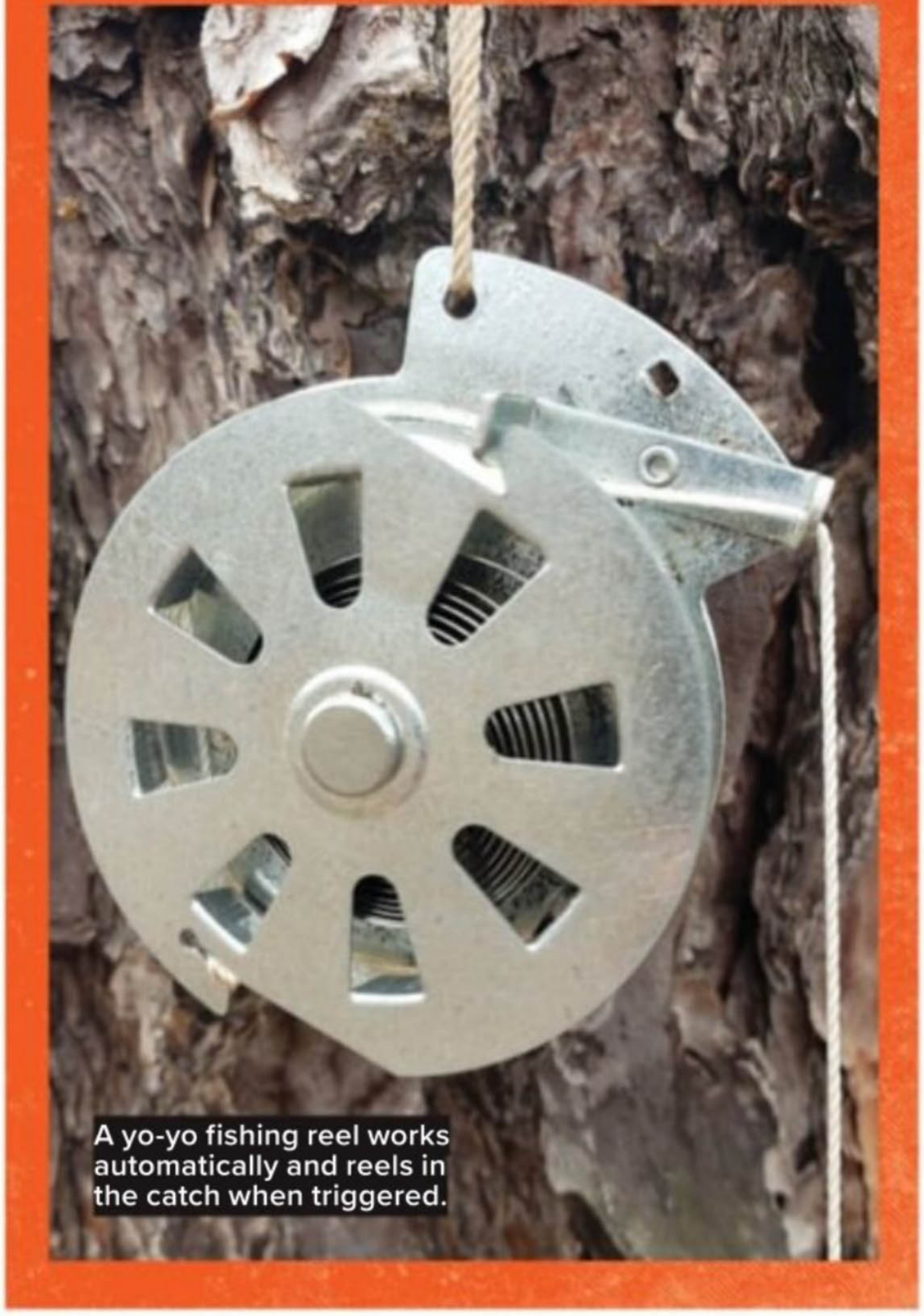
This is a twitch up treadle made with bark on the beam stick. This is typically set to snare a foot or leg.

LIFTING MECHANISMS

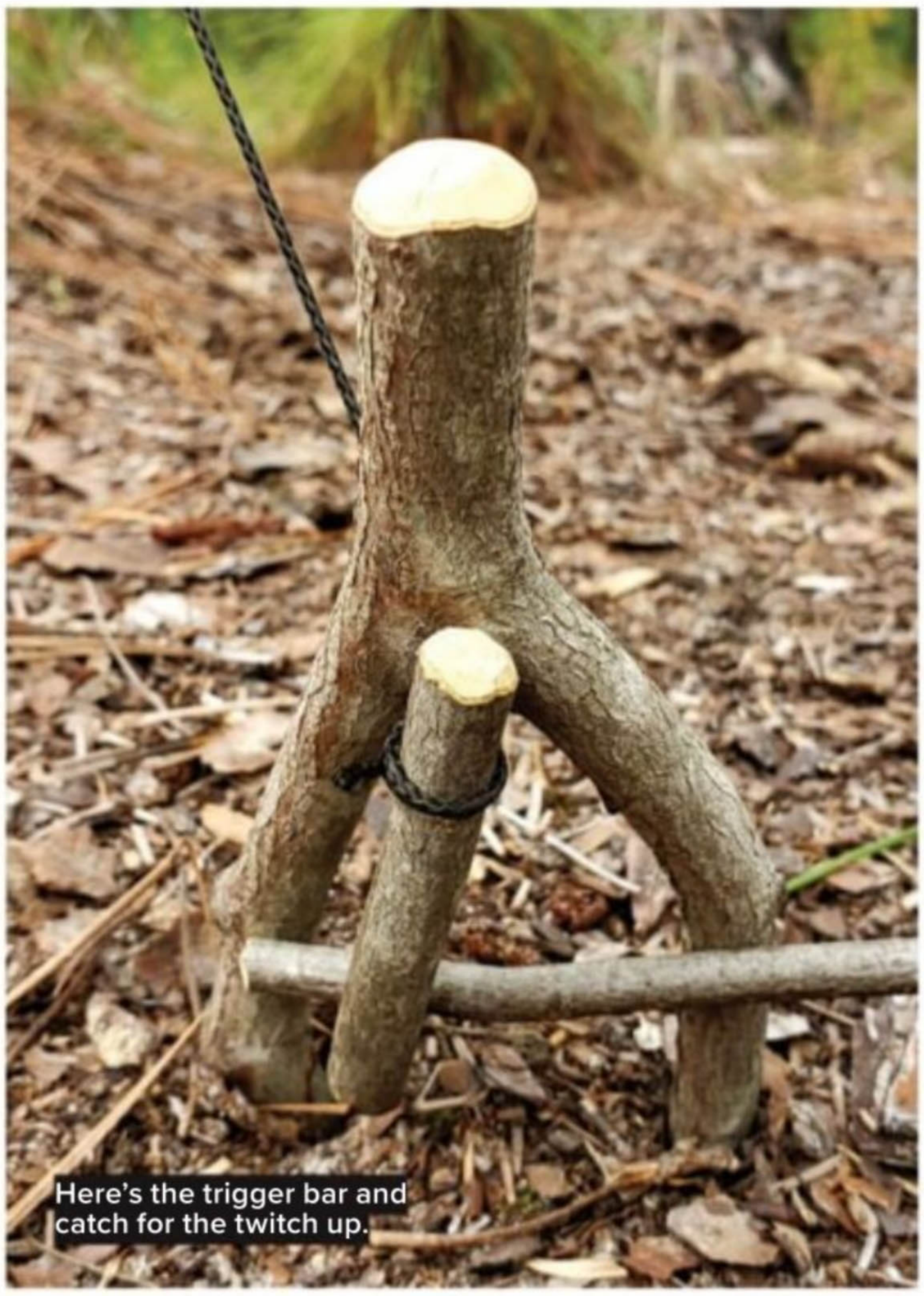
There are advantages and disadvantages to each type of "engine" used to provide lift to your snares. You simply cannot trust you will have access to your preferred method and therefore should familiarize yourself with multiple. The spring pole utilizes a bent sapling but that sapling loses lifting strength as the tree takes weight. Also, not every environment has small spring saplings.

Another method is the counterweight that uses rocks, logs or another heavy weights on the end of a lever pole. This method requires additional lashing and cordage, but it will never lose weight and the ability to lift over time.

The last two methods are more resource-dependent, but they're highly effective. A bungee cord or elastic band can be used for an incredible amount of tension, but the stretch can have inconsistent pull and lose flexibility in cold areas and over time. A mechanical fisherman or "yo-yo" fishing reel can be used as a lifting mechanism by transferring the reeling effect from sea to land. Unfortunately, for as effective these devices are, they are bulky and will likely be left behind.



A yo-yo fishing reel works automatically and reels in the catch when triggered.

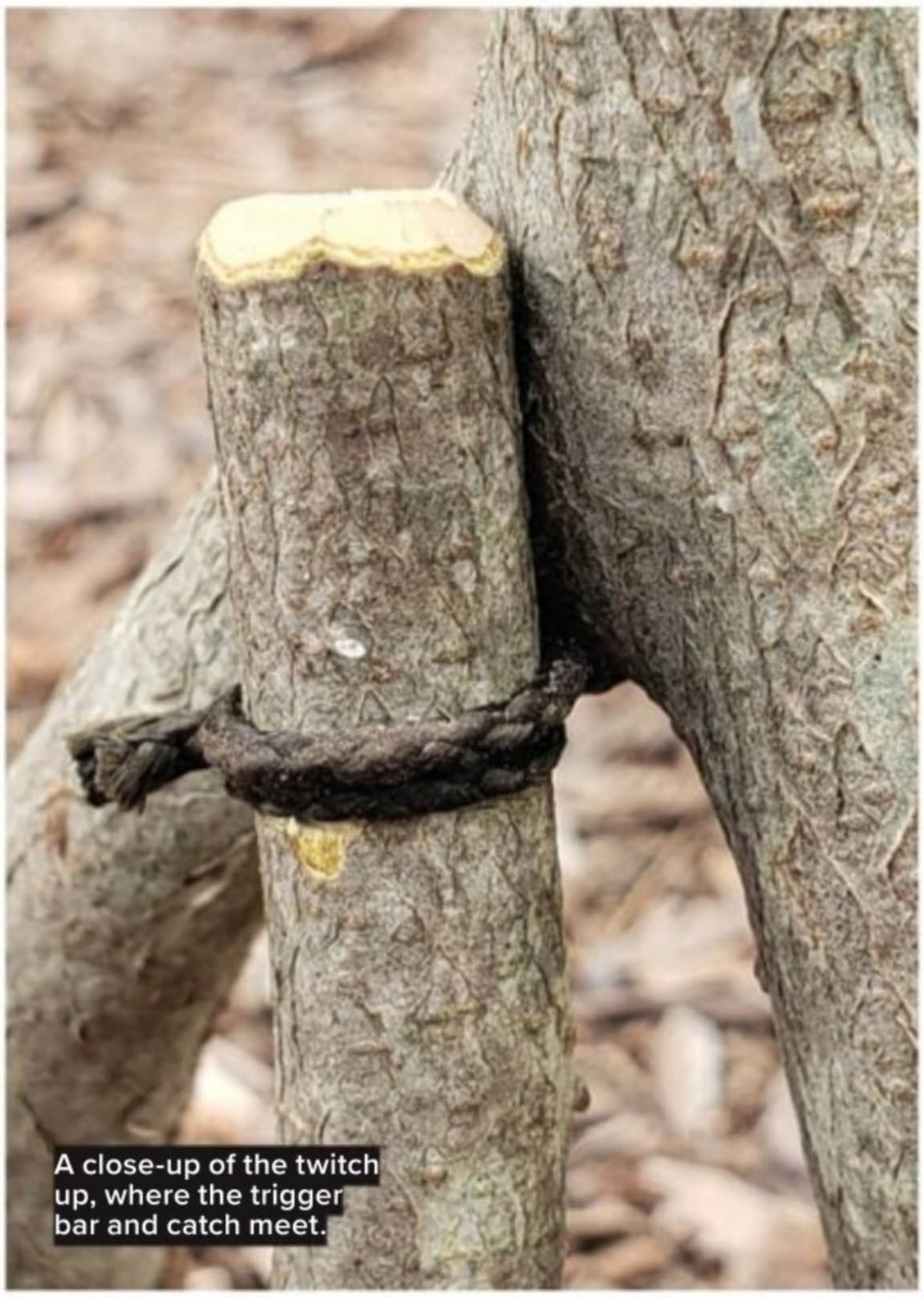


Here's the trigger bar and catch for the twitch up.

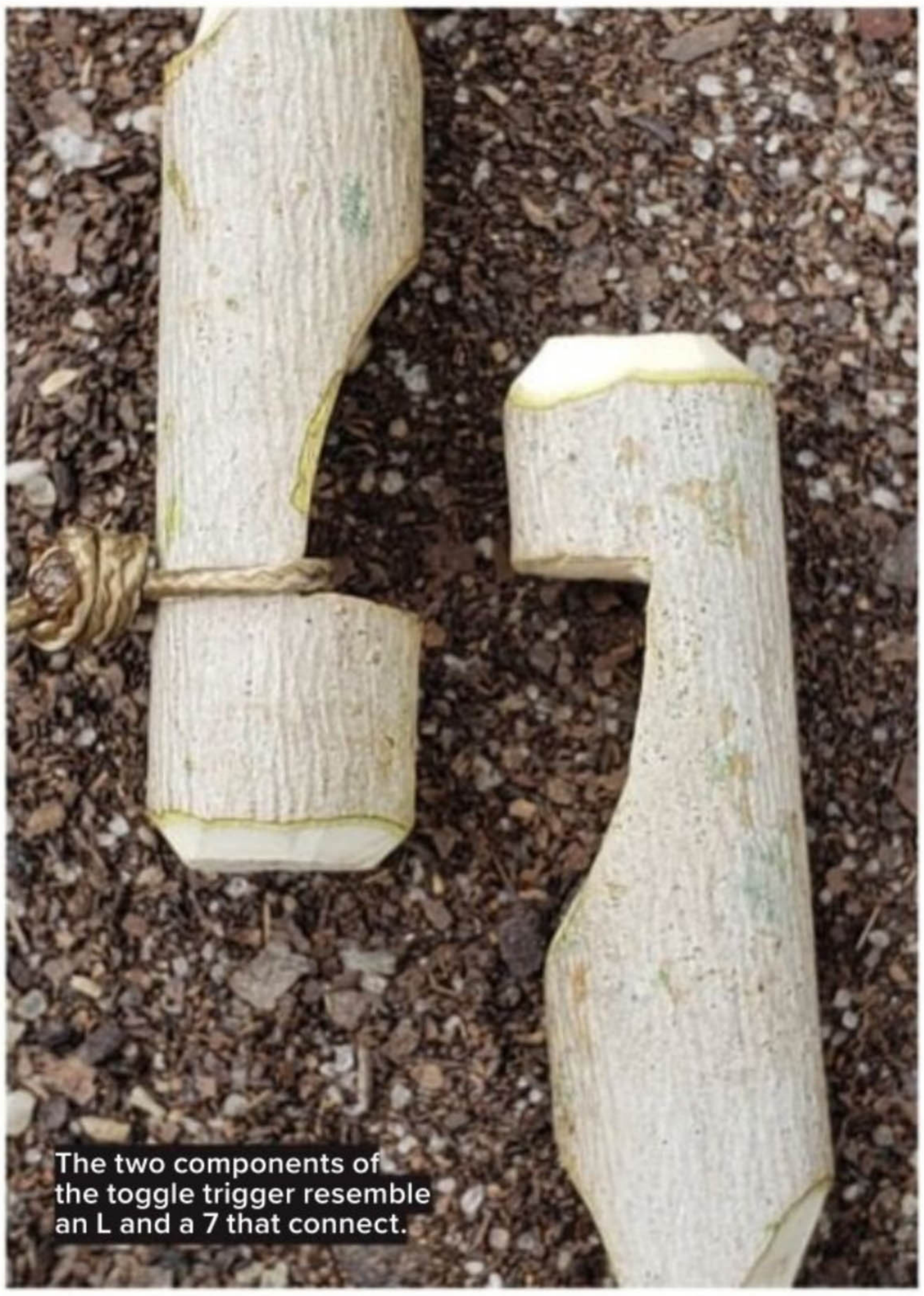
stick and against the beam, the sensitivity can be adjusted for a hair trigger. The twitch up can be modified to work with a baited stick, as a passive single beam/trigger combination or with a larger treadle platform. At the heart of the twitch up set is a trigger stick that slips past the anchor and sometimes a line. A variation of the twitch up that has been featured in many manuals is the "bow" or "crossbow" trap that launches an arrow. To minimize the amount of friction the trigger encounters, a small section of antler can be used. Not only does the antler have a smooth surface, but it can also hold an incredible amount of weight. Similar to the toggle trigger, a twitch up can be made from existing forks in branches and root systems. A common issue with the twitch up is the forked stick pulling from the ground after the trap is set. To counter this, barbs can be carved into the anchor used to grab the ground more securely.

FIGURE FOUR

A trap trigger that requires no cordage and can be carved with just a knife is a figure four. This trigger requires knowledge of carving chisel tips, 90-degree latches, a



A close-up of the twitch up, where the trigger bar and catch meet.



The two components of the toggle trigger resemble an L and a 7 that connect.

90-degree corner and, with arguable necessity, a beveled end. A figure four can be made from a single straight length of wood with a gradual taper from one end to the other. The thicker end can be cut to form the diagonal section, the middle length can be used for the upright and the thinnest section can be used for the trigger stick that runs horizontally. Figure four traps should be made from strong seasoned wood, as greenwood can flex under the weight and give a set in a bent shape. Carving seasoned wood will be more difficult than greenwood, but the process is less laborious with a strong, sharp blade. One variation of the figure four is carved with a multiple-forked branch for the trigger stick. This version does not require any bait and each of the branches can become the trigger.

There is no single trap trigger that will work in all conditions and no such thing as using a single trap in an emergency. Rock fields are the prime location for deadfall use in an area that squirrels, marmots and various rodents call home. In heavy forest, making deadfalls out of logs requires more work and more detailed setups. The traps employed will be resource-dependent and multiple traps—with a ratio of 12:1—should be used with the possibility for one good catch for every dozen traps placed.

When trees are abundant, lifting snares activated with twitch up and toggle triggers should be utilized first. Some areas will yield less desirable wood with knots and twisted grain. One key to trapping is knowing how to create triggers; another is knowing how to be creative and to make solutions when all you see are problems. When you own the skills to make these three trap triggers with ease, you'll understand the real skill with trapping involves much more. The world's best trap triggers mean nothing if you don't study animal behavior, practice the placement of those traps and triggers–and constantly seek improvement with plenty of trial and error.

Kevin Estela is a lifelong outdoorsman who grew up in New England. He is the author of *101 Skills You Need to Survive in the Woods* and hundreds of published articles on bushcraft and survival. He is also a highly sought-after instructor.

HANGING OUT HERE WOULD BE ABSOLUTE HEAVEN FOR MANY OF US, RIGHT?

Always be careful and ensure you won't inadvertently start a wildfire.

BURN IT UP

Get that blaze going fast

BY JIM COBB

THERE ARE FEW THINGS IN LIFE AS ENJOYABLE AND RELAXING AS SITTING NEXT TO A CRACKLING CAMPFIRE. I MEAN, THERE S A REASON WHY PATIO FIRE PITS ARE SO POPULAR. WHEN YOU RE OUT IN THE FIELD, THOUGH, FIRE SERVES MANY PURPOSES BEYOND JUST ENTERTAINMENT.

The ability to reliably get a flame going in virtually every weather condition means you can:

- Boil water to make it potable.
- Cook food to make it more palatable.
- Dry your clothing and yourself.
- Stay warm and avoid hypothermia.
- Call attention to your location and be found if you're lost.

The importance of a good fire kit cannot be overemphasized. Fortunately, this isn't difficult to assemble, nor does it need to be an expensive endeavor. You just need to account for three things—heat, a fuel source and oxygen. This is sometimes referred to as the fire triangle. The absence of any one of those ingredients means you won't have a flame.

Let's take them one by one.

HEAT

Generally speaking, when we're talking about a fire kit, heat is produced in one of three ways:

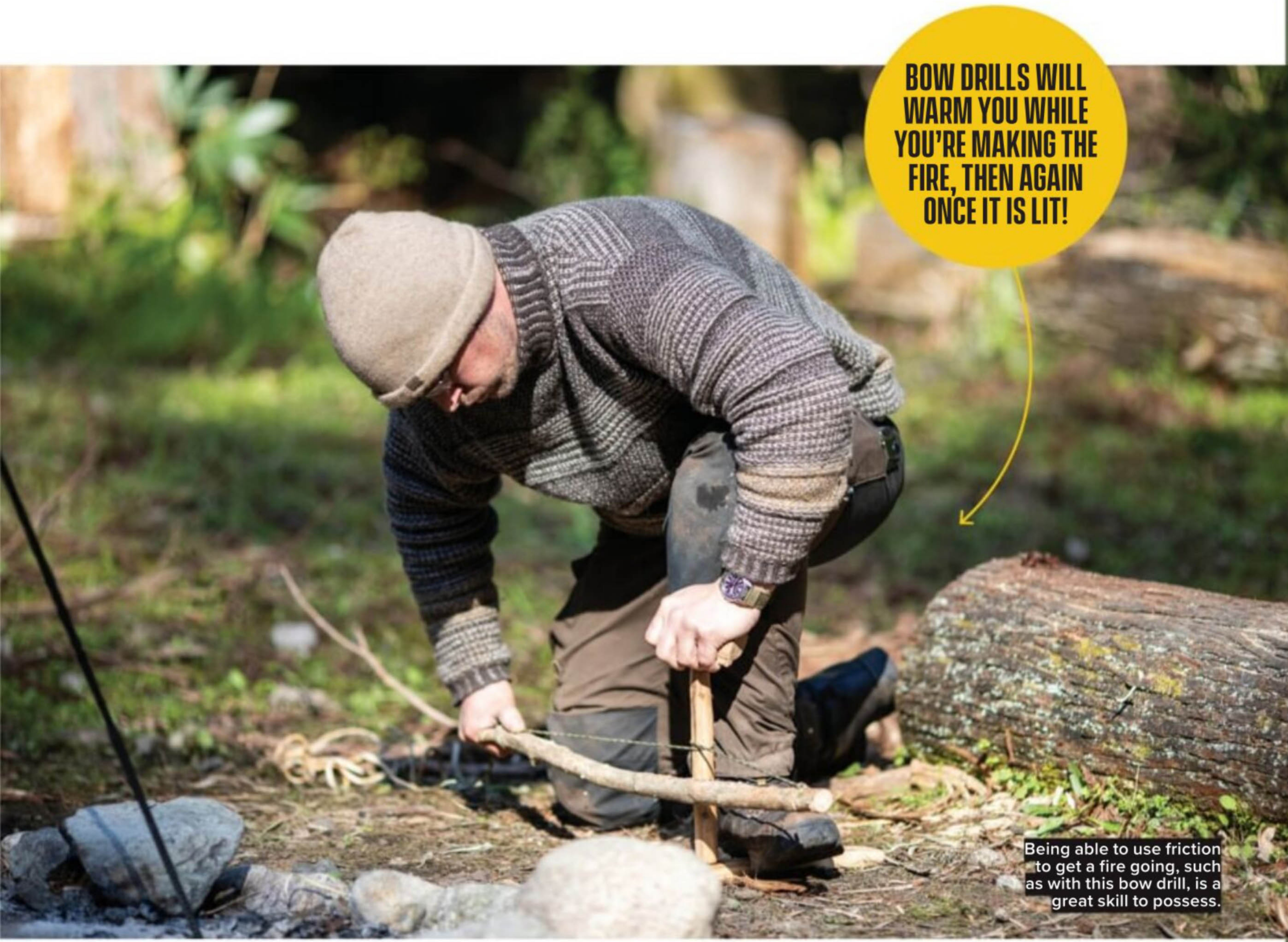
- Small flame
- Sparks
- Friction

A simple disposable lighter gives you an instant flame in most situations.

The ubiquitous disposable lighter is a reliable means of producing a small flame. Matches would also fall into this category. Most of us have probably started a fire in a fireplace, wood stove or campsite using a lighter or matches. In many situations, this is going to be the easiest option to use.

Sparks can come from a flint and steel set, a ferrocerium rod and scraper, or one of several different commercially produced devices, such as the BlastMatch. The nice thing about a ferro rod and similar spark generators is they aren't subject to weather. It doesn't matter if it is minus 30 F and snow is blowing sideways, sparks will still fly. The downside is that sparks require certain types of tinder to be effective.

Friction mostly refers to what we sometimes call primitive methods of fire-making, such as the bow drill or fire plough. In a literal sense, you're rubbing sticks together to generate enough heat to produce a coal, which is then used to light your tinder. While these methods are absolutely worth the time and energy to learn, for the purposes


BOW DRILLS WILL WARM YOU WHILE YOU'RE MAKING THE FIRE, THEN AGAIN ONCE IT IS LIT!

Being able to use friction to get a fire going, such as with this bow drill, is a great skill to possess.

of a fire kit, these would be considered secondary methods to pursue, at best.

Recommendation

My go-to is a Bic lighter or a TitanLight from Exotac. Both of these have proven to be incredibly reliable in all but the very coldest conditions. As a backup, I have a ferrocerium rod with a scraper attached to it. While you can use a knife spine as a scraper—provided it is a true 90-degree spine—I prefer to use a separate scraper.

FUEL

This is what the fire burns. For the purposes of our fire kit, this category refers to tinder. This is defined as being something that will easily light from a flame or spark. Plant fluff, birch bark, cedar bark—all of these and more can be great natural sources for tinder, if you can find them. The problem is that you might not come across easy-to-harvest sources for tinder, so it is wise to add some to your kit, just in case.

There are many products on the market today that work well. Tinder-Quick fire tabs are a popular option, as they're small, weigh nearly nothing and burn for a fair amount of time once they're lit.

There are also several DIY solutions to consider. One method is to dunk

> **GATHER EVERYTHING YOU'LL NEED IN ONE PLACE—INCLUDING PLENTY OF KINDLING—BEFORE YOU START TRYING TO GET THE FIRE GOING.**

Campfires inevitably become the center of companionship for the group.

cotton makeup-remover pads into melted wax, then let them dry and harden. To use, crack one in half and light it. They burn hot and last long enough to get your fire going.

Recommendation
For a store-bought tinder, I like Solkoa Fastfire cubes. You just scrape some material from the side of the cube and light it up, easy as pie. That said, I'm also fond of the homemade wax-covered makeup remover pads. They're incredibly cheap when you break it down and you can make a ton of them in a short period of time.

OXYGEN

At first, you might be thinking that if oxygen is an issue, then you probably have bigger problems on your hands than getting a fire lit. While in a sense that's true, we're not talking about a complete lack of air, but rather getting the oxygen where it needs to be to get the fire going. Surely, you're familiar with the concept of gently blowing on a coal, trying to coax it into flame, right? For our fire kit, we're going to pack something that does the same thing, but much more efficiently.

Head over to your local thrift store and buy the cheapest portable radio you can find. It doesn't matter in the slightest if it works or not. The only requirement is that it has a telescoping antenna. When you get home, remove the antenna and carefully cut the ends off, so you have a hollow tube that you can extend and retract. When you're having trouble getting a fire to go from coal to flame, you can extend the antenna and blow into it, directing the air precisely where it needs to go.

This a trick I learned from John McCann, owner of Survival Resources (survivalresources.com). He wrote about it in *Build the Perfect Survival Kit*, a book I highly recommend. He went so far as to create his trademarked Fire Blowing-Tube, which he sells through his store. It is larger and much more robust than a cheap radio antenna, plus it comes with a rubber tube that allows you to keep your face farther away from the heat as you use the tube.

CONTAINER

Obviously, you'll want some type of container to keep your fire kit contents together. As with any kit, my suggestion is to assemble the contents first, then find a container the appropriate size to fit them. I've used such things as an Altoids tin to various-sized pouches, depending on what I wanted to carry in the kit.

Another consideration with the container is how you plan to carry the fire kit. If you're traveling light, you might want something that will easily fit in a pocket, whereas if you're going to have a full pack, then you could go a bit larger.

PRACTICE MAKES PERFECT

Building a fire is as much art as it is science. No two fires will ever be exactly alike. Take some time to practice setting up fires on a regular basis. Even if the only way you can do it is to build them in a patio fire pit, that's better than nothing. Get familiar with your chosen fire starters—both heat and tinder—and see how they work for you. Experiment with different homemade tinder options and find out which ones are easiest for you to use.

Once you have the fire going, kick back and enjoy it.

> **DON'T DISCOUNT THE PSYCHOLOGICAL IMPACT FIRE CAN HAVE IN AN EMERGENCY. GETTING THE FIRE LIT CAN GIVE YOU A SENSE OF CONTROL.**

FATWOOD

It goes by several different names, including lighter knot and pine knot. Around here, we call it fatwood. When a pine tree dies, the sap collects in the heartwood of the tree. Over time, it goes from a sticky goop to a hard substance that permeates the wood. One of the components of this resin is terpene, from which we get turpentine. In fact, some fatwood even smells a bit like turpentine.

Fatwood is extremely flammable, which makes it a great natural source of tinder. To use it, you simply scrape some shavings from it into a pile, then light it up. If you come across a downed pine tree that looks like it has been dead for a while, poke around and see if you can harvest some fatwood for your next fire.

CHAPTER 4

EQUIPMENT

HUMANS INVENTED TOOLS FOR MANY REASONS–INCLUDING THAT THEY'RE FUN TO PLAY WITH!

NEW PRODUCTS

THIS COLLAR HAS A LOOP PANEL SO YOU CAN ATTACH A NAME TAPE FOR YOUR DOG!

1

CBI SURVIVAL MK2 KUKRI

Originally designed for World War II, this kukri underwent modifications to meet the specific needs of units serving in the China Burma India theater, particularly Air Force personnel. With a 13-inch overall length and an 8-inch blade, it is perfect for a wide range of chores without being cumbersome. It also comes with a well-designed leather sheath.

- **MSRP** $114
- **URL** *dlttrading.com*

2

MISSION READY DOG COLLAR

If you are ready to level up your favorite canine companion's gear, this is a great option. It has rugged nylon webbing and a Duraflex side release buckle. There is a 5.11 branded loop panel for your dog's name tape and an aluminum V ring for leash attachment. It is available in three sizes and all of them use reflective threads for added visibility.

- **MSRP** $20
- **URL** *511tactical.com*

3

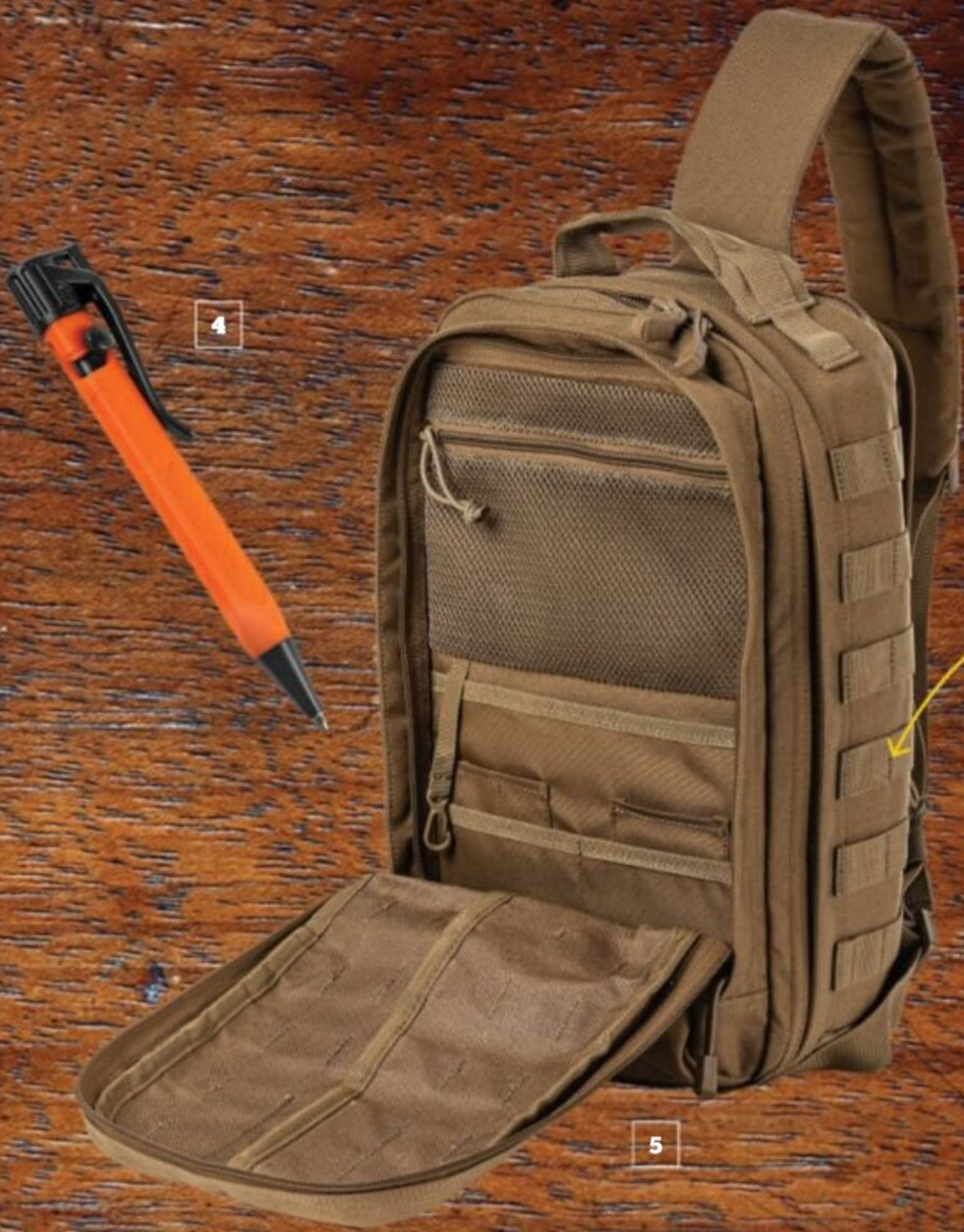
COLLAPSIBLE INSULATED BOWL

It starts as a 1-inch flat-pack disc and pops out to a rigid, resealable dish in seconds. With a 1-quart capacity, this is the ideal size for your main course, as well as for leftovers the next day or for sharing food around the campfire. The insulation sleeve protects your hands as you eat. It comes with a gasketed spill-proof lid.

- **MSRP** $30
- **URL** *myhydaway.com*

The latest and greatest gadgets and goodies

BY BSG STAFF



THIS PACK OFFERS PLENTY OF STORAGE WITHOUT WEIGHING YOU DOWN TOO MUCH!

4

MINI BOLT ACTION PEN

Rite in the Rain certainly knows what it's doing when it comes to writing utensils that perform in all weather conditions. This model features a triangular barrel that's easy to grip, even with thick gloves, for trustworthy handling. The bolt action feature means the pen won't accidentally deploy in your pocket and end up leaking ink everywhere.

- **MSRP** $14
- **URL** *riteintherain.com*

5

RUSH MOAB 8 SLING PACK

With a slim profile and 13 liters of carry capacity, this sling pack is perfect for an everyday carry bag. Its single-shoulder strap can be easily switched around for right- or left-side carry. The MOAB features a hydration-ready pocket with pass-through port, a fleece-lined gadget pocket for sunglasses and more, plus an interior admin panel to keep your gear organized.

- **MSRP** $95
- **URL** *511tactical.com*

6

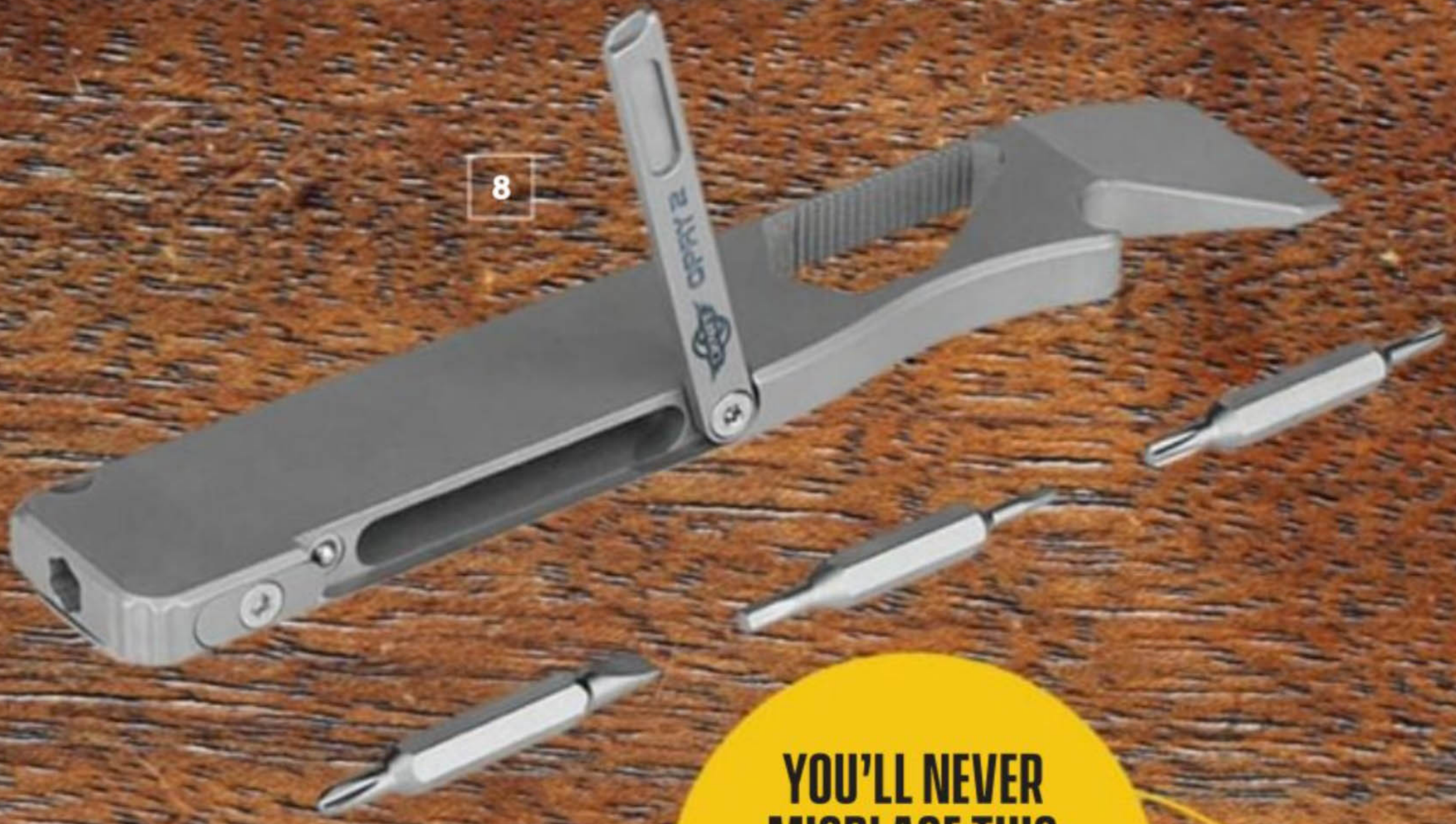
FOLEY MID

The Foley Mid blends in perfectly, no matter where you go. It packs tactical performance into a casual, concealed style so you're ready for anything. The mid-top design provides excellent ankle support as you move across mixed terrain. Full nylon uppers lighten the load without sacrificing durability and performance, while drop-in foam insoles offer plenty of comfort all day long.

- **MSRP** $80
- **URL** *511tactical.com*

7

8



YOU'LL NEVER MISPLACE THIS POCKET FLASHLIGHT, WITH ITS HIGH-VIZ COLOR!

9

7

EVO 2.0 8"

With comfort right out of the box, this boot comes equipped with Force Foam cushioning and an Ortholite foot bed. The stitched full-rubber outsole is slip-, oil-, and heat-resistant. The EVO 2.0 is AR 670-1 compliant for U.S. Army wear. It's even equipped with a hidden knife pocket. If you're looking for a long-lasting boot that's ready for just about anything, you've found it.

- **MSRP** $160
- **URL** *511tactical.com*

8

OPRY 2

This multifunctional EDC tool can be used as a prybar, screwdriver, bottle opener, hex wrench, ruler and more. It has an internal storage structure that is very secure, yet easy to access when needed. The Opry 2 comes with three double-ended bits, giving you a total of six different sizes so you can tackle a wide range of repairs. It's also compatible with regular 4mm bits.

- **MSRP** $50
- **URL** *dlttrading.com*

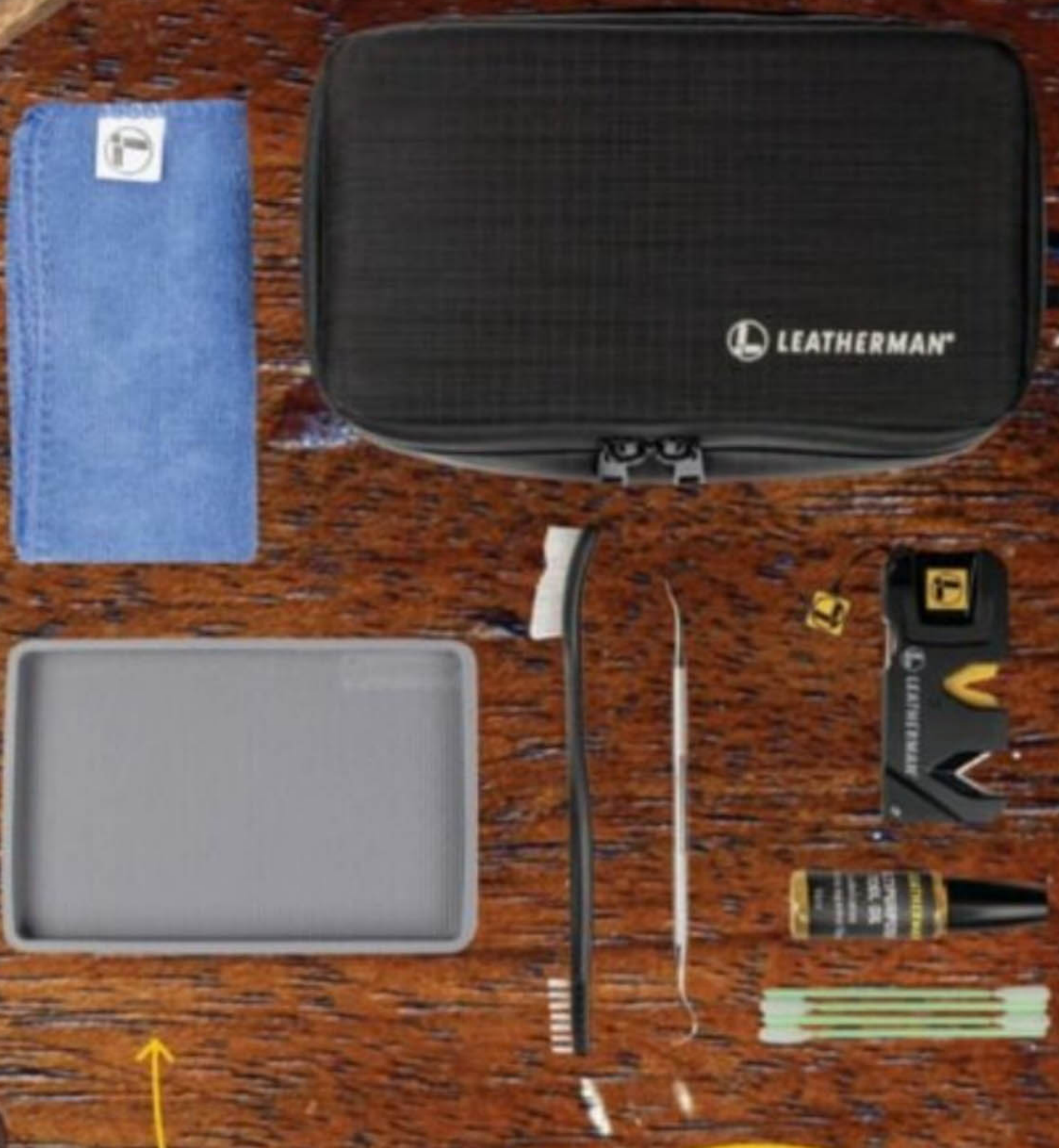
9

STYLUS PRO HAZ-LO

With a Class 1, Division 1 rating, this is an ideal penlight for those working in hazardous areas, food service or the aerospace industry. It measures just shy of 6 inches end to end and weighs a mere 1.9 ounces with the two included AAA batteries. With a high-visibility yellow exterior, you'll never misplace your flashlight again.

- **MSRP** $53
- **URL** *streamlight.com*

10



12

11

EVERY TOOL REQUIRES MAINTENANCE TO STAY IN GOOD CONDITION!

10

ODR

The ODR has a dual-purpose head that chops like an ax and breaks ground like a pick. It's a versatile tool, perfect for getting firewood ready for the night or for breaking through rocky earth. The head is made from 1055 carbon steel and it has a black coating for corrosion resistance. The handsome and durable handle is Tennessee hickory that's been slightly burnt to add dark textures.

- **MSRP** $75
- **URL** *crkt.com*

11

AINSWORTH EDC SHEATH

Built from premium top-grain leather that's been dyed through, it will produce a beautiful patina over time. It is offered in two sizes and is designed to handle your favorite Leatherman multitool as well as a pocket flashlight (16mm to 18.5mm in diameter). There's a clip for your keys, too. It will fit belts up to 1.5 inches wide. Keep what you need right at your fingertips.

- **MSRP** $85
- **URL** *leatherman.com*

12

LEATHERMAN TOOL MAINTENANCE KIT

Keep your multitool clean and ready. This kit includes cleaning supplies, a blade sharpener, a cleaning mat, microfiber cloth and lubrication oil. There is also a pick, swabs and a brush to help you get to all of the nooks and crannies. The kit container has enough room that you could even carry your multitool right inside.

- **MSRP** $70
- **URL** *leatherman.com*

FROM TAINTED TO TASTY

The diverse road to water purification

BY MICHAEL D'ANGONA

Don't underestimate the importance of being able to produce potable H2O wherever you travel.

WATER COVERS ABOUT 71 PERCENT OF THE EARTH'S SURFACE. WITH THAT STAGGERING NUMBER, ONE MAY THINK THAT WATER WOULD BE ABUNDANT TO EVERYONE AT EVERY TIME. HOWEVER, THIS ISN'T TRUE AT ALL. IN FACT, OF ALL THE WATER ON THE PLANET, LESS THAN 1 PERCENT IS VIABLE DRINKING WATER.

MAKE SURE YOU KNOW EXACTLY HOW YOUR FILTER WORKS SO THERE ARE NO MISTAKES!

For an individual in survival or emergency conditions, finding drinkable water may be incredibly difficult. Water may be at their fingertips, yet drinking it would mean severe discomfort or illness and even death for the thirsty person due to the water being tainted by contaminants, polluted by waste material or inundated with salt.

However, there are means to make questionable water potable and safe to drink. These come in the form of products one can buy to make water drinkable nearly instantly or items used in methods and techniques that transition "bad" water to fresh in just a few easy steps.

This guide will assist you in choosing the best options, so your next sip of water will be fresh, tasty and contaminant-free.

WHY TREATMENT IS NEEDED

While it may be obvious that drinking "bad" water would not be a logical thing to do, sometimes a seemingly fresh, crystal-clear water source may in fact hold the worst pathogens and contaminants. You simply can't trust sight and smell to determine whether water is safe to drink.

For example, let's say you're on a hike in the backwoods and come across a small, fast-flowing river. You look down into the water and it appears crisp and clear. Then you take a huge drink and satisfy your thirst and then move on. All may seem well, but you failed to see a dead carcass or pile of animal feces just a few feet away from your drinking point. Either one could have possibly caused material, unseen to the naked eye, to flow

SURVIVAL SPRING

Point-of-use filters can work well, but they aren't great if you need water for cooking.

directly into your path. Sickness, including severe stomach issues, may arise just a short while later. As this example illustrates, you just never know, and the only way to be sure is to assume all water is not potable and must be treated to be made safe to drink.

Potable Aqua®
with PA+Plus
Water Purification
TECHNOLOGY ① ②
Germicidal Tablets with PA+Plus
NO IODINE TASTE OR COLOR
Makes questionable water bacteriologically suitable to drink
Proven effective against Giardia lamblia when used as directed
• Camping • Hiking • Travel
WARNING
KEEP OUT OF REACH OF CHILDREN
POTABLE AQUA® NET CONTENTS .21 OZ (6 g) 50 TABLETS
P.A. PLUS NET CONTENTS 50 TABLETS
SURVIVOR FILTER

Water-purification tablets allow you to make questionable water biologically safe to drink. Electric water-filtering devices can make securing ready-to-drink water fast and easy.

BOILING IS KING

The first and most sure method to make water drinkable is by boiling it. A rolling boil, ranging between 162 F and 250 F, will kill all pathogens and allow you to drink the water with peace of mind. Boiling will not filter particles, so filtration is still needed (more on that later), but that is just a minor additional step when the reward is fresh drinking water. Naturally, for boiling you need two things: a heat source and a vessel to hold the water. Using fire to boil your water, especially when under a survival or emergency situation is probably most people's go-to option. See our fire kit story, "Burn It Up," on page 84 for tips on getting that fire going quickly. Your containment vessel for the water could include a stainless steel cup, metal canteen or any size cooking pot.

POTABLE WATER IS AN ABSOLUTE NECESSITY FOR SURVIVAL, AND INGESTING TAINTED WATER CAN LEAD TO SEVERE HEALTH ISSUES.

CHEMICAL ADDITIVES

Another means to treat water that is easy, inexpensive, and effective is by chemicals. This includes using unscented household bleach, iodine or chlorine dioxide tablets. These chemicals kill a large number of viruses and bacteria, although some, like Cryptosporidium and Giardia lamblia, are more resistant and may not be fully destroyed by chemical means. In the United States, bleach ranges from 5% to 9% strength. This number is important to know so you can add the appropriate amount of bleach. Too much and it may be harmful to the drinker, and too little means it won't be effective in killing the pathogens. Instructions may be on the label itself. If not, be sure to familiarize yourself with the proportions based on the bleach concentration that you use.

When using chlorine dioxide tablets or iodine, be sure to follow the instructions on the labels. The drawbacks to chemical purification include a wait time, ranging from 30 minutes to about an hour, for the chemicals to work; a noticeable aftertaste of the treated water; and limitations on what the chemical kills and doesn't kill. However, having these methods, as opposed to none at all, is not even up for debate. They can help keep you alive by providing drinkable water.

ULTRAVIOLET LIGHT DEVICES

This category of water-purification devices is small and not very well known by most. Ultraviolet light can kill some germs in water

SAWYER
WE KEEP YOU OUTDOORS
ONE 1 GALLON
SAWYER
CLEAN WATER
ONE 1 GALLON

ONCE FILLED, HANGING FILTERS WILL OPERATE ON THEIR OWN WHILE YOU'RE BUSY!

A large hanging filtering system is perfect for camping or when there's multiple people in your group.

by literally destroying their DNA and the bonds that hold the organism together. These devices are compact and usually have a wand that is placed in the water (contained in a bottle or small vessel) and will make unsafe water drinkable in about a minute or so. The drawbacks include possible failure of the unit or weak batteries over time (especially in colder weather), lower effectiveness in cloudy water (filtering first is recommended), and its limitations when wanting to filter large quantities of water quickly.

FILTRATION GEAR

Filtering is probably the most commonly used means by hikers, campers and survivalists to make contaminated water safe to drink. First and foremost, it should be noted that the word "filtering" is not what you may think. Pouring water through many layers of material (grass, sand, pebbles and such) is not purifying through filtering; it's just removing particles from the water. Yes, this is important, but it doesn't remove pathogens. For that, filters with ultra-thin membranes that stop microorganisms from passing through are needed.

These filtering units come in many shapes and size. Simple-to-use strawlike filters allow the thirsty person to just dip into a body of water (lake, stream, puddle whatever) and sip the water through the straw. The water is instantly filtered as it passes through the membranes. Other models that function the same way include large gravity-feed units, hand-pump versions, and electrically operated filters.

Additionally, water bottle filters can be used. These allow the user to fill the bottle with questionable water and as they sip it up, it filters out dangerous pathogens. Now, all these filters may sound like the perfect solution to having access to fresh water out in the field, but there is a catch. Not all filters are created equal. The membranes used make all the difference in what can and cannot be filtered. You'll come across terms like. 0.5 micron, 1 micron and 5 micron. Basically, the larger the number, the lower level of protection power the filter has. For example, a 5-micron filter will remove sediment and larger organisms like Giardia lamblia cysts, but it won't protect against smaller pathogens. On the flip side, a 0.5-micron filter can remove most bacteria, parasites, and some viruses like E. coli and Salmonella typhimurium. The key takeaway is to know the limitation of the filter

Boiling water is an excellent way to kill off waterborne pathogens.

you have eyes on, and if it doesn't offer enough protection, go smaller on the micron scale.

SALTWATER CONVERSION

Now, it should be well known by now that you cannot drink salt water. However, there are items that can extract the salt out of sea water and make it drinkable. These include a desalinator and a solar still. The desalinator is an expensive investment with base models priced at a thousand dollars or more, but if you travel near the coast or out at sea, then the investment may be worthwhile. It operates by pumping salt water through a tube and through multiple filters that extract the salt and allow the liquid to carry through to the awaiting cup or vessel. It then is safe to drink.

A solar still uses the sun to cause evaporation, which pulls fresh water out and leaves the salt behind. This process takes a rather long time, but it's passive and offers a steady supply of drinkable water, if the sun stays shining above.

WHEN IN DOUBT

You should always assume any water that's not coming out of a store-bought bottle or a trusted tap may be questionable, and this goes up exponentially when you're away from home in an outdoor environment. You can make your bad situation so very much worse if you drink contaminated water. However, with the information provided here—and the products to aid you—every drop that reaches your mouth now should be clean, fresh and pathogen-free.

Some water containers have built-in filters and clean the water as you drink it.

FINDING THE FILTER

Get ready for your next outside adventure by first securing a water-purifying device. The reputable companies below are great places to start.

Sawyer
From single bottles to faucet filters to large capacity gravity filters for large campsites, Sawyer has you covered in every category. *sawyer.com*

Survival Filter
This company has a filter to meet your every water need, from an individual unit to something more robust. *survivalfilter.com*

Alexapure
No matter if you need a filtering unit for survival, camping or everyday home use, Alexapure offers a wide selection and high-quality products for you. *alexapure.com*

Katadyn Group
This Switzerland-based company offers filtering devices of all shapes and sizes, perfect for the single hiker or larger groups. *katadyngroup.com*

Michael D'Angona is a freelance writer, author, martial artist and survival skill practitioner. He has published hundreds of articles encompassing such topics as self-defense, preparedness and outdoor skills. He currently offers magazine writing services and instructional videos at *mjd-writersresourc.wixsite.com/my-site*

As the saying goes, "There is no bad weather, only bad clothes."

LET IT RAIN

Waterproof gear to fight Mother Nature's wet side

BY MICHAEL D'ANGONA

WATER IS A NECESSITY IN LIFE, PROBABLY MORE SO THAN ANY OTHER NEED IN THE WORLD OF SURVIVAL. HOWEVER, ASIDE FROM ALL ITS BENEFITS, IT ALSO HAS A DARK SIDE–AND THAT INCLUDES WREAKING HAVOC BY SATURATING YOUR CLOTHING, DAMAGING ELECTRONICS, PREVENTING FIRE-MAKING AND LITERALLY DAMPENING YOUR CHANCES OF SURVIVAL.

However, there is a way you can fight nature's seemingly unrelenting force, and that's through the use of waterproof and water-resistant gear, clothing and equipment. It's a sure bet that at some point, the skies will fall during your survival or emergency situation and being drenched will only add to your already long list of problems. It's time to buy the right gear for nearly guaranteed rainfall.

From footwear to backpacks, to lightweight jackets and lesser considered items like notepads and power banks, the diverse items that are available in "waterproof format" are considerable in today's preparedness market.

Although this important category may have slipped your mind in the past when in prep mode, it's an easy fix now. Carrying waterproof items can truly mean the difference between staying warm, dry and comfortable, or spending the night soggy, wet and cold.

Coghlan's
Waterproof
Matches
Strike on box only.
Keep away from children.
Made in China
40 Safety Matches

WATERPROOF MATCHES

Matches will always be the go-to, easy way to get a fire lit, and these matches will accomplish that task even when exposed to moisture. Made with a waterproof coating, you'll rest easier knowing that any unexpected downpour won't kill your chances of starting a fire while you're outdoors. Just strike the match on the included waterproof striker and you'll have a flame instantly. Additionally, these small boxes fit perfectly in pants pockets, mini pouches or just about anywhere for survival or emergency applications. Each box contains 40 waterproof matches. Simple, easy-to-use and waterproof, you can't go wrong with these fire starters in hand.

Specifications

- Waterproof coating
- Includes waterproof striker surface
- Can be lit even after getting wet
- Cannot light accidentally
- Pack contains 10 individual boxes

- **MSRP** $10
- **URL** *coghlans.com*

UNION WATERPROOF BOOT

Comfort, durability and ultimate waterproof protection sums up this boot perfectly. The Union boot offers ideal foot security as you traverse both urban and rural landscapes by providing excellent grip on wet or uneven terrain, and by keeping your feet dry inside while under wet conditions. Its rubber toe design and full Vibram XS-trek outsole offer a beefy and rugged defense against Mother Nature's unpredictable surfaces. Be prepared for any outdoor job, and the Union boot is one of your most important go-everywhere tools. Available in Dark Coyote, Coyote or Black colors.

Specifications

- Vibram outsole
- Waterproof suede upper
- Rubber toe for protection and ultimate durability
- BBP waterproof lining
- Available in a wide range of sizes

- **MSRP** $180
- **URL** *511tactical.com*

FIRST AID KIT
SURVIVAL
WATERPROOF
BREAKWATER SUPPLY

WATERPROOF SURVIVAL FIRST-AID KIT

Rain shouldn't put a damper on your survival supplies with this dual-task first-aid kit and emergency pack. Containing over 100 helpful pieces, you'll be well prepared when faced with minor injuries or when an unexpected emergency comes your way. This kit features a fully waterproof soft-shell bag that offers a reflective front panel so it's easy to find at night. It floats on water in case it goes overboard, and it's highly compact and lightweight for easy carry on hikes or quick day trips through the woods. An included carabiner allows it to quickly attach to other packs or to firmly secure to your boat or outdoor vehicle.

Specifications

- Fully waterproof bag
- Floats on water surface
- Complete set of first-aid supplies
- Heavy-duty locking carabiner
- 101 total pieces included

- **MSRP** $45 to $50
- **URL** *breakwater supply.com*

WATERPROOF BACKPACK COVER

Your backpack doesn't have to be waterproof...if you have this protective cover by Rothco. Constructed of durable polyester ripstop fabric, you'll invite a downpour rather than fear one with this item by your side. It is easy to secure with a simple, yet effective elastic cinch pull cord and hook-and-loop retention strap. The cover stays in place even under harsh conditions. An included carrying pouch houses the cover when the sun is shining above.

Specifications

- Waterproof, coated ripstop fabric
- Secures with elastic cinch pull cord and retention strap
- Bottom grommet allows for drainage
- Includes easy-carrying pouch
- Fits backpacks up to 60L or 90L

MSRP $25 to $27
URL *rothco.com*

NEVADA SOFT SHELL JACKET

This jacket offers the trifecta of perfection with superb waterproof properties, a non-cumbersome fit and all the bells and whistles you need to carry your personal items, all the while staying warm and cozy when nature throws a chill your way. It sports a "ReadyPocket," which allow you quick access to your phone or EDC gear, two spacious front pockets for extra "stuff" and an ingenious hem system that allows the jacket to fit to your form for nonrestrictive or bulky wear. The Nevada Softshell is available in five sizes and in Black or Ranger Green colors.

Specifications

- Waterproof and breathable design
- Two-way center front zipper
- Adjustable cuffs with tunneled elastic and cuff adjustments
- Adjustable hem with internal shock cord system
- Hand pockets with zipper closures

MSRP $130
URL *511tactical.com*

P7R CORE FLASHLIGHT

Need a power flashlight that can handle Mother Nature's worst, while providing multiple light functions for a variety of outdoor scenarios? If so, then the P7R Core Flashlight has your name on it. Equipped with a rechargeable battery, a durable outer shell, an advanced focusing system and full water resistance and submersion capabilities, you'll feel safe and comfortable with this emergency tool in hand for both urban and rural situations. Additionally, the P7R Core offers simple one-button operation and can be stood upright, like a lantern, for hands-free use.

Specifications

- 1400 lumen output
- Eight light functions
- Rechargeable battery
- Water resistance IP68
- Submersible to 1.5 m deep for 30 minutes

MSRP $100
URL *ledlenser.com*

A RELIABLE FLASHLIGHT WILL BE OF GREAT HELP IN MANY EMERGENCIES!

LEDLENSER P7R Core

A T MID WATERPROOF BOOT

There are no feet sloshing around inside these incredible 5.11 Tactical waterproof boots. Sporting a fully waterproof mesh and water-resistant membrane, your feet will stay dry and comfortable even when Mother Nature lets loose with a violent, unexpected downpour. Even with its waterproof capabilities aside, this boot steps it up big with a complete support and stability system, a full rubber outsole, Ortholite insole, and high rebound interior foam for shock-absorbing capabilities, as well as ultimate comfort when on the move. Ideal for most environments and available in multiple sizes and colors, dig in deep with this amazing boot.

Specifications

- Waterproof, breathable mesh upper construction
- 3D molded rubber toe cap
- 5.11 Tac Dry waterproof membrane
- Full rubber outsole with slip and oil resistance
- All Terrain Load Assistance System for ultimate support and stability

MSRP $150
URL *511tactical.com*

WATERPROOF BACKPACK

No more worrying about rain ruining your personal gear when you have this waterproof pack on your back. Constructed of HydroWall material, high-frequency (non-stitched) seams, and dry suit-grade airtight zippers, your stuff, including delicate electronics, will always stay dry inside. This versatile backpack features a large main compartment, dedicated smartphone pocket, laptop sleeve and front buckle strap for oversize items. It offers curved, ergonomic shoulder straps and a well-balanced overall design for all-day comfort. Ideal for fishermen, campers, or anyone wanting waterproof protection while on the go.

Specifications

- Watertight protection
- Large, 25L main compartment
- Front and top grab handles for multiple carry options
- Ergonomic shoulder straps for all-day comfort
- Waterproof smartphone pocket

MSRP $220
URL *breakwater supply.com*

TAC DRY RAIN SHELL

Staying dry while outdoors is not only a comfort issue, but a survival one as well. Once your body is wet, hypothermia can set in and that could be disastrous for you. Prevent this by carrying the Tac Dry Rain Shell whenever you trek outside. Its seam-sealed construction and waterproof material keep out the rain, all the while providing breathable, and lightweight comfort. It sports a removable hood, hook-and-loop storm cuffs and a storm flap—basically every feature you need to fight an unexpected shower. Durable YKK zippers, five useful pockets and three pull-out panels round out this useful rain protector.

Specifications

- Ultra-light, breathable and fully waterproof
- 100% seam-sealed nylon
- Roll-up, removable hood
- Hook-and-loop storm cuffs
- YKK zippers

MSRP $140
URL *511tactical.com*

WATERPROOF SOLAR POWER BANK

Having power when in the deep outdoors is good, but when that power bank is waterproof, then it's absolutely great. This unit features portable power as you hike or stroll under the shining sun, and offers 3.7V 5,000mah dual USB outputs and a 5V 1,000mah input that integrates well with high-end electronics like cellphones, GPS trackers and tablets. Additionally, this power bank is built tough, with a full waterproof, durable shell that laughs off Mother Nature's worst. A lithium polymer battery ensures a quick charge time, and the included carabiner allows easy attachment to your pack or tent.

Specifications

- Waterproof plastic body
- Quick charging, lithium polymer battery
- Micro USB charging cable
- Simple to use
- Includes carabiner to secure unit to bags or packs

MSRP $58
URL *rothco.com*

LEDLENSER P5R Core

P5R CORE FLASHLIGHT

Many times, when you need a flashlight, your surrounding conditions are harsh and far from ideal. Because of that, you need a tough-as-nails light—and the P5R Core delivers in a big way. Not only does it offer Smart Light Technology for customizable and personalized light functions, but it's also super durable in dusty, dirty and—worse yet—wet conditions. Whether it's a downpour, a morning misting or sporadic rain, the P5R will operate without fail, and if you drop it in a puddle or large body of water, its submersible shell keeps its contents safe and moisture-free.

Specifications

- 500 lumen output
- Eight distinct light settings
- Water-resistant
- One-hand, front switch operation
- Submersible in water

MSRP $70
URL *ledlenser.com*

ALL-WEATHER WATERPROOF NOTEBOOK

Water and paper usually don't mix, unless you're carrying this amazing waterproof notebook from Rothco. This notebook allows you to take notes, draw pictures or jot down important trail markers even in wet or rainy conditions. It features a PVC cover and waterproof bonded paper, and it's compatible with pencil or an all-weather pen. This notebook is so moisture-resistant it won't fail you even when exposed to grease, humidity or sweat. Choose from Black, Olive Drab, or Coyote Brown colors, and four different notebook sizes to meet your personal needs. Ideal for campers, hikers, soldiers or tactical professionals.

Specifications

- PVC front and back covers
- Writing won't smear in any wet conditions
- Paper won't disintegrate, even if wet
- Use with a pencil or all-weather pen
- Compact unit, easy to store or carry

MSRP $6
URL *rothco.com*

ROTHCO
ALL-WEATHER
FIELD BOOK

SLICE AND DICE

Checking out the Huntsman

BY JIM COBB

A WHILE BACK, I CAUGHT A VIDEO FROM JOSHUA FISHER, OWNER OF EDGE KNIFE WORKS, IN WHICH HE WAS TALKING ABOUT A COUPLE OF HIS KNIVES. THIS WAS MY FIRST INTRODUCTION TO HIM AND HIS WORK. HE CAME ACROSS AS VERY DOWN TO EARTH AND PRACTICAL, WHICH ARE QUALITIES I TEND TO LOOK FOR IN A KNIFE-MAKER.

A POCKET-SIZE FIXED BLADE IS A GREAT ADDITION TO THE DAILY CARRY GEAR LINEUP!

This knife is on the smaller side, but it punches way above its weight class.

TECH SPECS

Overall length	7.31 inches
Blade length	3.75 inches
Steel	8670
Weight	3.07 ounces
MSRP	$210
URL	*dlttrading.com*

After watching that video and digging into the Edge Knife Works brand a bit further, I ordered the Huntsman model from DLT Trading. After using it for a few weeks, I reached out to Fisher for more information about the model, as well as himself.

I've found that some of the very best knifemakers came to the art because they wanted something in a knife that they couldn't find elsewhere. I asked Fisher about the design of the Huntsman. He said, "The Huntsman model was designed as an all-around everyday knife to fill a variety of roles, from hunters to outdoorsmen to office work and tradesmen. It was one of my first models while I was working in the trades as a carpenter and transitioning to a full-time knife-maker."

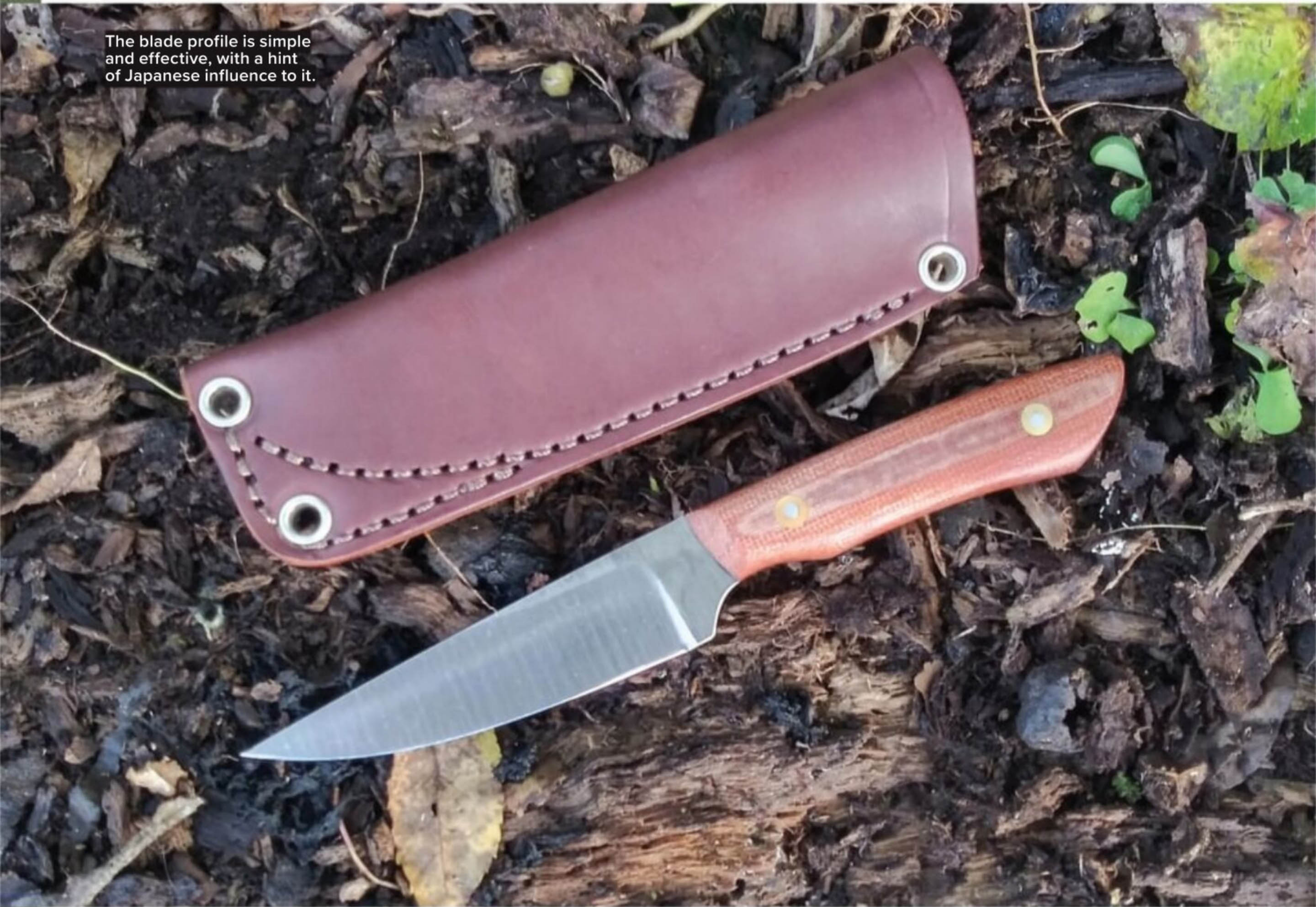
WHAT'S IN THE BOX?

I like knives that have a purpose, rather than just being decorative. Don't get me wrong, I see the beauty in fantasy blades and such as much as anyone else, and I'd be lying if I said I don't own any knives that were purchased strictly for their looks. But as a general rule, I usually stick with ones that I won't be afraid to use. When I received the Huntsman, I quickly found that it ticks several boxes for me.

- Pocket-size fixed blade
- Straightforward, simple design
- Built to be used and abused

I'll be honest, it was love at first sight.

The Huntsman is 7.31 inches long, with a 3.75-inch blade, and it weighs just a hair over 3 ounces. I was initially a little worried about the short length of the handle, as I have larger hands and don't like a three-finger grip. However, the finger groove really helps lock the knife in place when you're holding and using it.



The blade profile is simple and effective, with a hint of Japanese influence to it.

The one I purchased has vintage natural Micarta scales. This is one of my favorite handle materials, especially because it pairs nicely with a leather sheath. (More on that in a bit.) Edge Knife Works offers a dizzying range of other Micarta options, including black burlap, red canvas and olive drab green.

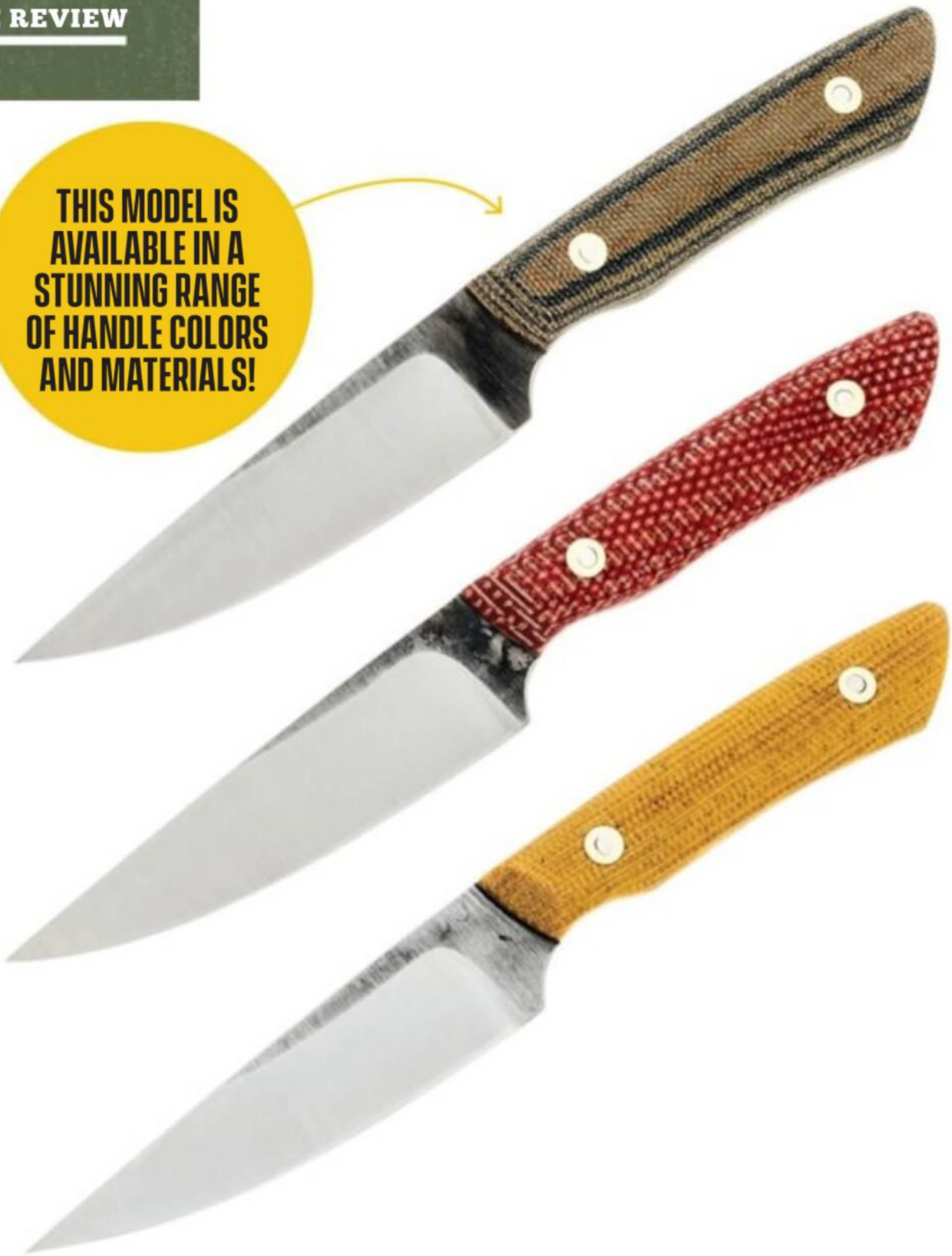
The Huntsman comes with a very well-made leather sheath. It isn't set up for belt carry, though. This is a pocket-carry sheath, equipped with a nicely designed clip on the side. I tend to just drop it into my pocket, though, rather than attach it to the side of my pocket. While this means there's a two-step process to draw the knife, as I need to remove it from my pocket, then slide off the sheath, that's not a deal breaker for me. But if you're looking for the best of both worlds, here's a tip: Tie a piece of cordage to the bottom of the sheath and securely affix the other end to your belt. Make sure there's enough length to allow the knife and sheath to rest comfortably in your pocket. When you need the knife, just pull it from your pocket. When the cordage gets taut, the sheath will just fall to your side as the knife slides free.

I asked Fisher about how he came up with the design. He said, "[It] was heavily

The sheath has a sturdy pocket clip to keep it in place as you move about.

AS A KNIFE COLLECTOR AND USER, I OWN TONS OF BLADES. THE HUNTSMAN HAS BECOME ONE OF MY VERY FAVORITES BY ANY MAKER.

Vintage natural Micarta looks great and allows for a solid grip on the knife.



THIS MODEL IS AVAILABLE IN A STUNNING RANGE OF HANDLE COLORS AND MATERIALS!

THE HUNTSMAN IS A GREAT SLICER, PERFECTLY SUITABLE FOR LIGHT-DUTY FOOD PREP AS WELL AS WORKING IN THE OUTDOORS.

influenced by my work as a carpenter and needing a tool that was minimalistic and versatile, I needed a handle that had a good point to index and lock into but wasn't bulky. The blade shape itself was designed to be versatile enough for daily tasks on the job, from detail work with the acute tip to heavy work with the base of the blade near the ricasso."

The overall purity of the design brings to mind a Japanese influence. Fisher confirmed this, saying, "My knives in general are very much inspired by Japanese styles and aesthetics. I focus strongly on simplicity and performance. Every knife I make is carefully crafted with those two key elements in mind."

PERFORMANCE

I've had the Huntsman in hand for several months now. It didn't take long for it to become one of the fixed blades I swap around for daily carry. The two others are a Field Scalpel made by D. Tope Knives and a Grunt 2.0 from Vehement Knives. The Huntsman is definitely in good company.

I wear a size L/XL glove and the Huntsman has what I'd consider a 3.5-finger handle. While there are no palm swells, the handle is contoured for comfort and feels great in the hand. There are no hot spots anywhere.

This is a full-tang knife made from 8670 steel. This is a new-to-

For a visual size comparison, starting from the top, here are the Edge Knife Works Huntsman, the Buck 110 Folding Hunter, and, ironically enough, a Swiss Army Huntsman.

me steel and I found that the knife holds a good edge, even after extended use. Research indicates that the steel will patina over time, but I'll admit I'm pretty careful with my blades and clean them well shortly after use whenever possible. This steel is also developing a reputation for being very tough, yet not being impossible to sharpen. So far, my experience with it has been very positive.

Something I really appreciate about the Huntsman is the thinness of the blade. At just 0.10 inch, it is an incredible slicer. It works great for impromptu food prep in the field or the kitchen. The needle-sharp point works particularly well with trimming the inside of mini peppers and the like.

As a daily carry knife, I've used the Huntsman for things like opening packages, cutting various types of cordage, and a little whittling and carving, among other things. We're currently in the middle of remodeling our detached garage, and the knife has been at my side the entire time. It worked particularly well in helping to carve out hinge placement on a replacement door jamb.

The Edge Knife Works product line is carried by several distributors, including DLT Trading and Knife Outpost. Interested potential customers can also contact Joshua Fisher directly:

Edge Knife Works
808-292-9089
edgeknifeworks
@gmail.com

In addition to general-purpose knives like the Huntsman, Fisher also has a line of purpose-built kitchen knives that have started to show up on the websites of his distributors.

Take this for whatever it's worth. I'm both a knife user and a knife collector. As a result, I own far more knives than any human being would ever really need. The Huntsman is truly one of my very favorite blades. It has a simple design that just plain works.

WOUNDED WARRIOR PROJECT

One of Joshua Fisher's passions is helping with the Wounded Warrior Project. Founded in 2003, it began as a program designed to help wounded veterans who were in the hospital recovering after serving in the Middle East. Over time, a wide range of services has become available, including mental health counseling, career counseling and long-term rehabilitative care.

Fisher has worked with many veterans, teaching them how to make knives, tomahawks and other tools, giving them a creative outlet as well as helping them learn new skills.

Learn more about the Wounded Warrior Project at *woundedwarrior project.org.*

Backwoods
Survival Guide
PRACTICAL ADVICE FOR THE SIMPLE LIFE

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